

PUBLIC MEETING
PALOUSE EMPIRE MALL
1850 WEST PULLMAN ROAD
MOSCOW, IDAHO

JUNE 9, 1994
6:30 p.m.

MODERATOR

Nolan Jensen, Department of Energy

TEST AREA NORTH GROUNDWATER CONTAMINATION
OPERABLE UNIT 1-07B

Presenters:

Dan Harelson, DOE-Idaho
Greg Stromberg, EG&G

TRACK 1 INVESTIGATION AT TEST AREA NORTH
OPERABLE UNITS 1-01, 02, 06, 09

Presenters:

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(1) MR. JENSEN: My name is Nolan Jensen. (2) I'm from the Department of Energy. Since there (3) are so few of you here, I mean, several of us (4) work on the project, and we know who we are, but (5) since there are so few of you, we're going to be (6) really informal tonight, and hopefully just (7) answer your questions and have a dialogue. (8) Couple things I wanted to cover before (9) we get started. First of all, let me go ahead (10) and go to this chart. Really the reason that (11) we're here is, like I said, just to talk to you, (12) answer questions, anything you want to know about (13) the project, and then we do have a court reporter (14) here, because we have a formal comment period. (15) We're in the comment period for the cleanup (16) project and it goes until June 17, so that's kind (17) of outlined here what we're here for. (18) I'm going to just briefly talk about (19) - kind of set the stage for how these projects (20) all come together. In 19 - end of 1991, there (21) was an agreement that was signed between the (22) Department of Energy, the Environmental (23) Protection Agency, the State of Idaho, and that (24) was to do all of the environmental cleanup and (25) investigation work at the INEL.

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(1) And what we did is, there are several (2) facilities out at the INEL, and we divided those (3) up and called each facility basically a Waste (4) Area Group. And tonight we're talking about Test (5) Area North, which is one of the facilities, and (6) it's Waste Area Group No. 1. And what we did is (7) there were several locations in each facility (8) where there were known contaminated sites or (9) potential contaminated sites and we divided those (10) all up into

what we call Operable Units. That's (11) just a way to divide the sites up into similar (12) problems, so we could attack it in a more (13) organized fashion. (14) And tonight we're talking about Test (15) Area North. There are ten Operable Units there. (16) One of them was the TAN injection well, and that (17) was what we call an interim action cleanup that (18) was started about - we signed the ROD on that (19) about two years ago, the Record of Decision, and (20) that one is in operation now. (21) The injection well is really closely (22) tied to the project we're talking about tonight, (23) the groundwater investigation, because the (24) injection well is the source for this (25) contamination. So we started cleaning up the

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(1) well knowing that there was an issue there, while (2) we were investigating the larger problem, and (3) we'll be talking more about that tonight. (4) There are also several other Operable (5) Units that have a number of different types of (6) issues, like underground storage tanks, spills, (7) disposal sites, several smaller areas, and we did (8) smaller investigations on those and we'll be (9) talking about several of those smaller (10) investigations as well. (11) The way we set up the agreement is (12) when we do all these investigations, look at all (13) the sites on their own, after all that is done, (14) then at the end we go back and take an overall (15) look to see if by looking at them individually we (16) missed something that we needed to consider in (17) the big picture, by looking at them together. (18) And so there will be a comprehensive (19) investigation that is more of a big-picture look (20) to see if we missed anything. And that's how the (21) - that's called a comprehensive investigation, (22) and that will start in about a year for Test Area (23) North. (24) Okay. I know Chuck has seen this one, (25) because we presented this slide when we were up

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(1) here about a month or two ago when we were up (2) here. (3) When we talk about the investigations (4) that we do, basically what we're doing is going (5) out,

looking at sites that we think there - (6) either we know there was contamination there or (7) we think there's contamination or suspect it. (8) And the whole process that we go (9) through is to look at that contamination and find (10) out what its extent is, what the contaminants (11) are, and then what risks they pose. And so (12) everything comes down to an evaluation of risk. (13) And risk is divided generally into two (14) parts. We talk about carcinogenic risks or (15) cancer causing risks, and then the (16) noncarcinogenic risks or other health effects (17) that contaminants might pose. For example, a (18) contaminant might cause damage to the (19) neurological system or to an organ, or birth (20) defects, that sort of thing. (21) And they're expressed in different (22) ways. Carcinogenic risks is expressed in terms (23) of risks of getting cancer, contracting cancer. (24) The Environmental Protection Agency set up what (25) was deemed an acceptable range. And that range

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(1) is shown here. It's between one in 10,000 and (2) one in 1,000,000 chances of contracting cancer. (3) And what that basically means is that (4) if someone were exposed to a situation at this (5) level, you would expect that one person exposed (6) to that contamination out of 10,000 would (7) contract cancer, in excess of the national (8) average. (9) So if we're within this range or below (10) it, according to the EPA guide, it's acceptable (11) range, it's okay, and doesn't need to be cleaned (12) up, probably. (13) In the case of the hazard index, it's (14) a little bit different. The hazard index for the (15) noncarcinogenic contaminants is expressed in (16) terms of, again, a hazard index. And a threshold (17) of one is set. (18) And what that means is, if you're (19) below - if the calculations show you're below a (20) hazard index of one, there's a high degree of (21) certainty that even sensitive populations would (22) not be affected and would not have that health (23) effect. As we get above one, the degree of (24) certainty decreases. So as we get above one,

we (25) have to look more carefully to see if a health

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(1) effect might occur.

(2) That generally – the reason I'm (3) introducing this is the presenters will come back (4) and explain the results of their risk assessments (5) and they'll use this chart when they get to (6) that.

Okay.

(7) Now, before I introduce our (8) presenters, there are a couple other (9) introductions I want to make.

(10) First of all, if you don't know Chuck, (11) Chuck is right here, Chuck Broschious. He's a (12) member of what we call our Citizens Advisory (13) Board at INEL. It was established a few months (14) ago and they are looking at several things, one (15) of them being the Environmental Restoration (16) program. And Chuck is a member of that board.

(17) Also, I'd like to introduce now, we (18) have – like I said, our agreement is signed by (19) DOE, EPA and the State of Idaho. EPA is not with (20) us tonight, but we have representatives from the (21) State of Idaho Department of Health and Welfare, (22) and Margie English will give us a brief (23) introduction and say a few words.

(24) MS. ENGLISH: Thank you, Nolan.

(25) I'm the Waste Area Group manager for

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(1) the State working on the Test Area North project, (2) and I also have a few members of our State team (3) with me here tonight. I have Gary Winter, who is (4) a hydrogeologist, and he's helped evaluate (5) groundwater aspects with respect to this (6) project.

(7) Dave Hovland is our technical (8) supervisor and he's helped us evaluate a number (9) of aspects on this project. And I think many of (10) you have seen him here at these meetings before.

(11) And Jeff Fromm – although he kind of (12) had a rough trip here, he just came in the door (13) – he's our toxicologist and he's helped us (14) evaluate risks associated with the site.

(15) So on behalf of all of us, I'd like to (16) welcome you to this meeting. We're very glad (17) that you're here and we all encourage the public (18) participation process.

(19) Tonight you're going to hear about

a (20) very complex groundwater problem and one that is (21) going to be difficult to solve. Over the past (22) couple of years, the State has worked with the (23) DOE and the EPA to evaluate the problem and to (24) formulate viable remedial alternatives. And it (25) has not been an easy process for a lot of

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(1) reasons, but we believe that the preferred (2) alternative that you'll hear about tonight is the (3) best approach to continue to address the (4) problem.

(5) As Nolan alluded to, the reason we are (6) here tonight is to present the data to you and (7) the remedial alternatives and give you a chance (8) to ask questions, and then to find out your (9) opinions on the proposed remedial strategy.

(10) Any comments that you make, either (11) verbal or written, will then be used by the three (12) agencies to help formalize our – to help (13) determine our final remedial decision. And that (14) decision will eventually being formalized into a (15) Record of Decision.

(16) So, again, I want to thank you for (17) coming and I want to encourage you to ask any (18) questions that you may have and offer any (19) comments that you may have, either on the (20) groundwater project or on the Track 1 sites that (21) you'll hear about later in the program.

(22) Thank you.

(23) MR. JENSEN: Thanks, Margie.

(24) Like I said, EPA is not here tonight, (25) but they were at the other meetings and they did

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(1) have a brief statement that was read into the (2) record.

(3) Okay. That sounds all pretty formal (4) so far, doesn't it? Hopefully we can be a lot (5) more casual now.

(6) I'm going to introduce our (7) presenters. Before I do that, though, we do have (8) a couple of things that if you want just general (9) information about all the cleanup activities, (10) there is a Citizens' Guide at the back that you (11) can have. And this is the proposed plan. It (12) talks about the cleanup project that we're going (13) to be discussing tonight. So those are some of (14) the things that you can look at.

(15) And, also, the back of the agenda

has (16) an evaluation form. If there's anything we can (17) do to make this, our public meeting process, (18) better for you and more helpful, please go ahead (19) and comment.

(20) One last thing. How many times have I (21) said that?

(22) We're going to have about a 20 – or (23) the meeting is going to be divided generally into (24) two parts. We'll have about a 20-minute (25) discussion by the people who did the project, and

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(1) then we'll have a question-and-answer period. (2) But, you know, there are so few of us, go ahead (3) and ask any questions you want during the (4) presentation, but just try to keep it sort of (5) short so we don't go on forever and don't get (6) through the presentation before we have a (7) question-and-answer period. But let's be real (8) informal, and go ahead and raise your hand (9) whenever you'd like. (10) And then after the presentation and (11) question-and-answer period, if you'd like to give (12) us a comment, we'll have a special section just (13) for that.

(14) So I'll go ahead now introduce Dan (15) Harelson, and he was the DOE project manager on (16) this one.

(17) Go ahead, Dan.

(18) MR. HARELSON: As Nolan said, I'm Dan (19) Harelson. I'm the Department of Energy project (20) manager for cleanup activities at the Test Area (21) North.

(22) As I'm sure most of you know, the (23) Idaho National Engineering Laboratory is a (24) Department of Energy facility. It's about 50 (25) miles west of Idaho Falls. The whole site covers

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(1) 890 square miles. Most of the facilities are (2) located here in the southern portion of the (3) site. One facility is located up in the north (4) area. It's the Test Area North. It's located (5) about 28 miles north of the other facility.

(6) In general, the groundwater flow is (7) from northeast to southwest. It's the Snake (8) River Plain Aquifer, which is underneath the (9) site. At the Test Area North, there's a little (10) of a southeasterly component of groundwater flow, (11) but it hooks

around to the southwest as you move (12) away from test area.

(13) Test Area North was originally (14) established to support research and development (15) on nuclear-powered aircraft, that was done in the (16) 1950s and was canceled in the early 1960s by (17) President Kennedy.

(18) Following this nuclear aircraft (19) program, there were a couple programs devoted to (20) research and development on nuclear energy. (21) Those kind of wound down in mid 1980s.

(22) There are four main facilities at Test (23) Area North. There's the Technical Support (24) Facility, which is, as the name suggests, (25) support. There are maintenance shops, vehicle

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(1) shops, offices. There's a guard gate and a fire (2) station.

(3) The Initial Engine Test Facility is a (4) test stand that was used for these (5) nuclear-powered aircraft engines. It's no longer (6) in use and we have been gradually dismantling.

(7) The Loss-of-Fluid Test Facility and (8) the Water Reactor Research Test Facility were (9) both established to support the research efforts (10) into nuclear energy.

(11) Currently at the Loss-of-Fluid Test (12) Facility, the Army is manufacturing advanced (13) armor for the tank program.

(14) Down here at the Water Reactor (15) Research Test Facility, there is a little bit of (16) research going on. One of the programs involves (17) development of a sensor for explosives at (18) airports.

(19) The groundwater contamination problem (20) that we're dealing with was caused by an (21) injection well located at the Technical Support (22) Facility. This is a view of the Technical (23) Support Facility.

(24) The injection well is located right (25) about here. It's a 12-inch-diameter pipe that

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(1) extends directly into the aquifer. It's (2) completed to a depth of about 300 feet. It was (3) used from roughly 1955 to 1972 to dispose of (4) pretty much all of the wastewater that was (5) generated at the Test Area North. That's (6) everything from process and industrial wastewater (7) to treated sanitary

sewage effluent.

(8) The industrial and processed (9) wastewater created a contaminant plume, the most (10) widespread contaminant is trichloroethylene. (11) It's also called trichloroethene, or TCE. It (12) extends in a plume that is about a mile and a (13) half long, by half a mile wide.

(14) It was first discovered in 1987 during (15) routine sampling of the drinking water at the (16) Test Area North. An air sparging system was (17) installed to treat that drinking water to keep (18) the contaminant level below the federal drinking (19) water standards. An air sparger is much like an (20) air stone in an aquarium. It bubbles air through (21) the water and that strips out the contaminant.

(22) In 1990, Department of Energy went in (23) and removed about 45 cubic feet of sludge from (24) the inside of that injection well. We followed (25) that in 1992 with a proposed plan for an interim

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(1) action. We also scoped the Remedial (2) Investigation/Feasibility Study that's the (3) subject of tonight's meeting.

(4) The Interim action involves extracting (5) contaminated groundwater directly from this (6) injection well, treating it to remove the (7) contaminants, and then discharging the treated (8) water to an existing disposal site.

(9) We initially planned to operate that (10) system at about 50 gallons a minute (11) continuously. When we started pumping on that (12) well, we hadn't pumped it nearly as hard as we (13) have been on this injection well interim action, (14) and we've run into contaminant levels much higher (15) than we anticipated and also contaminants we had (16) not seen before.

(17) We are currently operating it in a (18) batch mode, which means we will draw in 15,000 (19) gallons of water, treat that to remove the (20) contamination, and discharge it. So far we've (21) removed over 3,000 pounds of organic contaminants (22) from the aquifer.

(23) MR. BROSCIOUS: Could you elaborate a (24) little bit on contaminants

you didn't expect or (25) various levels?

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(1) MR. HARELSON: We designed the (2) treatment system to handle ten to 15 parts per (3) million of trichloroethylene. We have been (4) running - at times we have gotten 300 parts per (5) million trichloroethylene, which is essentially (6) 30 times what we had anticipated. We have also (7) found dichloropropane, which is another organic (8) contaminant similar to trichloroethylene. We (9) have found that in levels as high as 1800 parts (10) per million.

(11) AUDIENCE MEMBER: How much was the (12) TCE?

(13) AUDIENCE MEMBER: Could you speak up, (14) please?

(15) MR. HARELSON: We found that that - (16) oh, the question?

(17) AUDIENCE MEMBER: The question.

(18) MR. HARELSON: We found the (19) dichloropropane at - I'm sorry, I lost my train (20) of thought. Would you repeat that question?

(21) AUDIENCE MEMBER: What was the level (22) of TCE?

(23) MR. HARELSON: We found peak levels of (24) about 312 parts per million.

(25) And this is in the interim action, and

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(1) that's been discovered in the March-April time (2) frame, so...

(3) Can I provide the other information on (4) this -

(5) MR. BROSCIOUS: Those numbers are (6) actually pretty low by these other -

(7) MR. HARELSON: Well, I think the (8) numbers in that document that you're looking at (9) are parts per billion, so this is a thousand (10) times. So to convert it to parts per billion, it (11) would be 312,000 parts per billion.

(12) MR. BROSCIOUS: And that translates (13) into the organics - were there any other (14) surprises in terms of fluctuations of (15) radionuclides?

(16) MR. HARELSON: We encountered (17) strontium in one case that was markedly higher (18) than what we found previously.

(19) We've also been running into a lot (20) more particulate matter, undissolved sand and (21) clay material that, while it's not a contaminant, (22) it's been a little

bit problematic in terms of (23) the treatment and operations.

(24) We feel we've modified the system (25) adequately to deal with it, the particulates.

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(1) And the strontium seems to be tied up with that (2) particulate matter. It seems to adsorb through (3) that, the particulate.

(4) AUDIENCE MEMBER: What's the source of (5) the particulate matter?

(6) MR. HARELSON: There seems to be two (7) types. There's some heavy stuff that seems to be (8) associated with what was disposed down there, and (9) then there is also some very fine particulate (10) matter that seems to be associated with the clay (11) interbeds that are found to be part of the (12) aquifer matrix. So it seems that it's material (13) that you would get if you put in a water well and (14) developed that water well, you would get back (15) sediment out of the water well, some of it from (16) the aquifer and some of it from it appears from (17) material disposed down there.

(18) Greg Stormberg is here and he can (19) follow up on these questions.

(20) AUDIENCE MEMBER: Once your water goes (21) through your treatment facility, what's the (22) concentration levels of the strontium when it (23) goes in the -

(24) MR. HARELSON: The standard we're (25) working to that's specified in the Record of

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(1) Decision for the interim action is 300 picocuries (2) per liter.

(3) AUDIENCE MEMBER: How does that (4) compare to the drinking water standard?

(5) MR. HARELSON: It's significantly (6) above the drinking water standard.

(7) AUDIENCE MEMBER: About how much?

(8) MR. HARELSON: 292 picocuries per (9) liter.

(10) AUDIENCE MEMBER: Is there any problem (11) with putting that high of a concentration back (12) into an unlined percolation pond where it can (13) obviously migrate back into the aquifer and (14) continue to cause problems, as opposed to putting (15) it into a lined evaporation pond, where at least (16) it wouldn't be going in - potentially

getting (17) into the aquifer again?

(18) MR. HARELSON: When we wrote the (19) Record of Decision, the State was very concerned (20) about that potential problem. And we evaluated (21) that using a standard methodology that both the (22) State and EPA reviewed and accepted, and we (23) determined that it did not pose a problem to the (24) aquifer or to contaminating the soil and then (25) having people subsequently inhale or ingest the

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(1) soil.

(2) So we evaluated that very carefully (3) and determined that it did not pose a problem.

(4) AUDIENCE MEMBER: I'm sorry I can't (5) get off of this, but these percolation ponds have (6) been used since the site opened in the 50's and (7) have apparently been identified as sources of (8) contamination to the aquifer, as you know, (9) because they're a straight line.

(10) It's only hoping that the soil column (11) is going to bind up some of that, some of those (12) contaminants, before it finally gets to the (13) aquifer. That's the hope.

(14) But the reality is, as you look at the (15) water sample data from the aquifer, you're seeing (16) that there is those specific contaminants clear (17) down in the aquifer. So it's just hard to (18) imagine why the State and EPA would allow this (19) remedial action to proceed using those same old (20) stale waste management techniques.

(21) MR. HARELSON: Well, one point I'd (22) like to clarify, then I'll let the State answer (23) it.

(24) The water that we're discharging from (25) this interim action is going to a portion of a

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(1) pond that has not been contaminated. So there is (2) not existing contamination in the pond.

(3) As I said, we very carefully evaluated (4) whether the strontium at the levels we are (5) discharging would impact either the aquifer or (6) the inhalation and ingestion pathways, and (7) determined that it did not pose a risk. The (8) State and EPA were both involved in that (9) evaluation and they concurred with the (10) evaluation.

(11) Dave?

(12) MR. HOVLAND: I might add that the (13) interim action is a - is relatively short-term (14) disposal of that type. It's only to last what, a (15) couple of years, on the interim action?

(16) MR. HARELSON: Well, at this time, the (17) interim action will also be a piece of the final (18) action and that's going to be two years, so a (19) total operation period of about two years and ten (20) months.

(21) MR. HOVLAND: Yeah, but the final (22) method of treatment or whatever discharge with a (23) final solution has not been determined yet.

(24) MR. HARELSON: That's right.

(25) MR. HOVLAND: So this is an interim

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(1) action and we did do the modeling to ensure that (2) it was protective of the pathways you mentioned. (3) And I believe that perhaps some of the large (4) concentrations of strontium in the aquifer (5) probably were introduced through the pathway (6) directly through the injection well.

(7) MR. HARELSON: I think almost (8) certainly Greg can address that better than I.

(9) MR. HOVLAND: So I think there's a (10) couple different things going on related to how (11) the high concentrations of strontium got into the (12) Snake River Plain Aquifer.

(13) AUDIENCE MEMBER: Well, just to give (14) you an example, these are numbers from test (15) reactor areas. The first one, strontium-90, in (16) that perched water was at 18,000 picocuries per (17) liter. And as you said, the standard EPA's (18) maximum concentration standard is eight. Now, (19) that was immediately under those the warm waste (20) - the three percolation ponds at the Test (21) Reactor Area.

(22) AUDIENCE MEMBER: And that was in (23) about like 50 feet; right?

(24) AUDIENCE MEMBER: But clearly this (25) stuff left, I mean, was on its way down.

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(1) AUDIENCE MEMBER: Do you have the (2) information there about deeper perched water and (3) the Snake River Plain Aquifer, because there is (4) some direct information

related to -

- (5) AUDIENCE MEMBER: I don't remember (6) that. It does drop off significantly. I can't (7) even remember any strontium-90 in the aquifer (8) there in the Snake River Plain. No, I don't (9) believe so. I think it really drastically (10) decreased by the time it got to that deeper (11) perched zone.
- (12) AUDIENCE MEMBER: Well, that would be (13) understandable, it would decrease with depth, but (14) the fact remains it's on its way to the aquifer. (15) The stuff moves.
- (16) AUDIENCE MEMBER: Another point to (17) bring out is the volume of water discharged at (18) the Test Reactor Area was millions of gallons a (19) day, where as what we're discharging from the (20) interim action is - I don't -
- (21) Greg, do you have an idea?
- (22) MR. STORMBERG: Hundreds to thousands, (23) probably, at the most, and that's not every day, (24) either.
- (25) MR. HARELSON: Can we move to the

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- (1) Remedial Investigation?
- (2) Greg Stormberg is one of the principal (3) investigators from the Remedial (4) Investigation/Feasibility Study, and he can (5) describe what we discovered from the Remedial (6) Investigation, outline the alternatives that were (7) considered for remediation.
- (8) After he's finished, I'll come back (9) and describe the alternatives that are presented (10) in the proposed plan and try to describe why we (11) prefer the alternative that we prefer.
- (12) Greg?
- (13) MR. STORMBERG: Chuck, before I step (14) into the Remedial Investigation, I just want to (15) kind of add to this pond question.
- (16) The pond in question here, the TSF (17) disposal pond, it took the discharged waste (18) discharge from 1972, after the injection well was (19) closed.
- (20) In 1989, in order to determine whether (21) or not that was a potential source of (22) contamination, we actually went into the pond (23) next to the standing water bodies and on the (24) outside of the pond, with shallow bore holes to (25) basalt, and did depth-profile sampling, and to be

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- (1) honest with you, in general, found absolutely (2) nothing.
- (3) AUDIENCE MEMBER: How deep were those (4) samples taken?
- (5) MR. STORMBERG: Down to basalt, which (6) was roughly 40 feet.
- (7) AUDIENCE MEMBER: Okay.
- (8) MR. STORMBERG: Since that time, as (9) part of the Remedial Investigation, one, I think (10) three or four groundwater monitoring wells have (11) been put in, both down gradient and (12) cross-gradient from this pond down here in the (13) lower corner, go out here, and on the back side (14) of the pond. And both of those groundwater (15) monitoring wells were clean of any (16) contamination.
- (17) AUDIENCE MEMBER: Okay.
- (18) MR. STORMBERG: One last point that's (19) different from the TRA area is that we don't have (20) any interbeds between the top of basalt at 40 (21) feet and the aquifer, so we don't have any (22) perching layers there. What water we do have is (23) perched right on top of the basalt in the (24) sediments, the surficial sediments on this side. (25) Like I said, to my recollection. And maybe

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- (1) that's just food for thought here.
- (2) AUDIENCE MEMBER: It might be well (3) useful to include that data in the Administrative (4) Record.
- (5) MR. STORMBERG: It is.
- (6) AUDIENCE MEMBER: It is there?
- (7) MR. STORMBERG: Yeah.
- (8) AUDIENCE MEMBER: Also data on the (9) other two injection wells?
- (10) MR. STORMBERG: Yes.
- (11) What I'm going to do this evening is (12) talk about two things, the results of the (13) Remedial Investigation that was carried out in (14) 1992, and then give you an introduction to the (15) types of technologies that were looked at to (16) remediate the groundwater problem and how those (17) technologies are then screened to get us down to (18) a small handful that we can do a very detailed (19) analysis on and select a preferred alternative (20) from, and talk about the specifics of the (21) preferred alternative.
- (22) With respect to the Remedial (23) Investigation, which is the characterization (24) portion of this study, that's where we want to (25) characterize

what the system is like. We want to

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- (1) take a look at the nature and extent of the (2) contamination, what kind of contamination we're (3) dealing with, and how widespread are they.
- (4) Okay. And then after we have an idea (5) of that, then we go ahead and take a look at the (6) risk posed to human health and the environment by (7) those contaminants.
- (8) In order to determine or identify and (9) define that nature and extent of contamination, (10) we drilled a number of groundwater monitoring (11) wells and we collected several rounds of (12) groundwater samples.
- (13) We had them analyzed for a variety of (14) constituents, both organic and radionuclides in (15) general.
- (16) That information, in conjunction with (17) data that we collected during 1989 and 1990, (18) allowed us to identify seven basic contaminants (19) that, at this point, we're concerned about. (20) Those include the volatile organics, TCE, (21) dichloroethene, tetrachloroethene. These are (22) chlorinated volatile organics.
- (23) Then we have some radionuclides, and (24) these included strontium-90, cesium-137, tritium, (25) and uranium-234. Dan already mentioned that

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- (1) since the interim action has become operational (2) we have identified dichloropropane in the water (3) from the injection well itself. We have also (4) identified americium-241 in a couple of samples, (5) but it isn't a regular occurrence, at least not (6) at this time.
- (7) Basically what we're dealing with is a (8) very dynamic system. We may not have all the (9) answers with respect to the specific (10) contaminants, but I think we have a fairly good (11) idea on the general class of contaminants, (12) whether volatile organics or radionuclides.
- (13) AUDIENCE MEMBER: How about (14) plutonium-238, 239, 240, cobalt?
- (15) MR. STORMBERG: Haven't detected (16) them.
- (17) AUDIENCE MEMBER: Any heavy metals?
- (18) MR. STORMBERG: We have sporadic, and (19) we've determined - we've basically decided (20) they're

outlier hits of lead. If you really take (21) a look at the metals data, the lead is in places (22) that there is absolutely no way it could be, and (23) at levels that are really variable, even between (24) duplicate samples.

(25) We feel like those outliers are more

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(1) of an analytical glitch than a reality. But (2) that's the only heavy metal that I can remember.

(3) AUDIENCE MEMBER: Which ones did you (4) test for?

(5) MR. STORMBERG: The list is about 20 (6) or 30 long.

(7) AUDIENCE MEMBER: (Indiscernible)?

(8) MR. STORMBERG: Very possibly, yes.

(9) What we found as a result of the (10) drilling and sampling program is that – well, (11) what we're going to look at is both the (12) horizontal extent of contamination and the (13) vertical extent. Okay?

(14) As Dan mentioned, the horizontal (15) extent or lateral extent of contamination can be (16) defined by the TCE groundwater plume. It's the (17) most widespread of any of the contaminants, about (18) a mile and a half long, goes down the groundwater (19) gradient, about a half mile wide. (20) All of the other contaminants, their (21) plumes would fit well within the TCE plume, in (22) fact, only extend about a half a mile at the (23) outside away from the injection well. So we use (24) TCE as our base line plume.

(25) With respect to the vertical extent of

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(1) contamination, I need to back up and just give (2) you a brief description of the subsurface (3) environment.

(4) We're dealing with basalt flows, and (5) in between some of those basalt flows we have (6) sediments. We call them sedimentary interbeds. (7) So we're interested in the vertical extent of (8) contamination, how deep it's gone, and what are (9) the properties of these sedimentary interbeds. (10) Okay.

(11) The Snake River Plain Aquifer at TAN (12) starts about 200 feet and it extends – or the (13) affected part of it extends down to about eight (14) or 900 feet. Okay. So we're dealing with an (15) effective aquifer that may be seven

or 800 feet (16) thick, six to 800 feet thick.

(17) Well, what we found from the drilling (18) and sampling is that this interbed here – we (19) call this the QR interbed – is continuous, and (20) it's about 15 to 40 feet thick; it has a range. (21) It's composed of silts and clays.

And (22) the groundwater analyses above and below this (23) interbed indicates that the contamination (24) exceeding drinking water standards is confined (25) above this interbed, this continuous interbed is

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(1) acting basically as a barrier to the downward (2) migration of contaminants, that we found no (3) groundwater below this interbed that was (4) contaminated with any of contaminants of concern (5) above the drinking water standard. Okay. That's (6) important –

(7) AUDIENCE MEMBER: How many wells do (8) you have below that interbed?

(9) MR. STORMBERG: We have three or four (10) that go below.

(11) AUDIENCE MEMBER: And how many times (12) has this been sampled?

(13) MR. STORMBERG: Three times. We also (14) sampled it during the actual drilling program. (15) We took depth-specific profiles as we moved on (16) down.

(17) What's important about this interbed (18) is that, since we have an effective aquifer depth (19) of about six to 800 feet thick and yet our (20) contamination is confined to the upper, let's (21) say, 200 to 250 feet, we're dealing with a much (22) smaller volume of water that we potentially have (23) to treat. Okay. So we use that with respect to (24) remediation technologies that we do evaluate.

(25) One last point I'd like to make with

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(1) respect to the nature and extent of contamination (2) is with the injection well itself.

(3) Based on the sludge that we removed in (4) 1990, the Remedial Investigation data, and the (5) interim action information that's starting to (6) come back, it's fairly apparent that the highest (7) concentrations of contamination are still within (8) the immediate vicinity of this well. The (9) concentrations decrease rapidly as we

move away (10) from this well. Within 100 feet, we're dropping (11) by a factor of 10-to-100 in some cases.

(12) Okay. So what this tell us is that we (13) probably have residual undissolved contamination (14) in the injection well, in the annular space (15) outside of that injection well, and that's (16) important with respect to remediation as well.

(17) AUDIENCE MEMBER: Excuse me a second.

(18) MR. STORMBERG: Yes.

(19) AUDIENCE MEMBER: So the injection (20) well goes into that interbed?

(21) MR. STORMBERG: No, sir.

(22) AUDIENCE MEMBER: It's not as it's (23) drawn there?

(24) MR. STORMBERG: Yeah, it – they drew (25) it a little bit deep. It actually goes to about

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(1) right here.

(2) AUDIENCE MEMBER: Okay.

(3) MR. STORMBERG: This portion should (4) not be here. Good observation.

(5) Okay. Once we've defined the types of (6) contamination that we were looking at or looking (7) for and how widespread they are, what we wanted (8) to do is take a look at the risks posed by those (9) contaminants. Okay. And basically we looked at (10) three scenarios, three different scenarios.

(11) We took a look at what we call a (12) current industrial use scenario, where we (13) evaluated workers and visitors who are out there (14) at the present time and they're using the water (15) from the production wells that are operational, (16) and they're located right about here, at the (17) northern edge of the plume.

(18) We also took a look at two future use (19) scenarios. We looked at future residents using (20) water from anywhere within the general (21) groundwater plume, and we also took a look at (22) future residents using water strictly from the (23) injection well itself. (24) Now, for all three of these scenarios, (25) we evaluated various pathways, exposure

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(1) pathways. That's how those contaminants are (2) taken up into the body. We looked at the (3) inhalation of

volatiles, for example while (4) showering. We also looked at the ingestion of (5) the water, or the drinking of that water.

(6) For the future resident, we took a (7) look at one additional exposure pathway, and that (8) was the ingestion of food crops irrigated with (9) the contaminated water. Okay.

(10) What we found with respect to risks is (11) that under the current scenario for workers and (12) visitors, we had a total cancer risk that equated (13) to one additional incident of cancer per (14) 1,000,000 individuals, okay, which is below the (15) acceptable range. So we know that we don't have (16) a risk there for cancer-causing constituents. We (17) saw a hazard index of .003, which is well below (18) the threshold of one. Okay.

(19) For the future residential use, where (20) we were pulling water or using water from (21) anywhere within the general groundwater plume, (22) there was a total cancer risk that equated to (23) three additional incidents of cancer per 100,000 (24) individuals. (25) Right across there you'll see that

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(1) we're still within the acceptable range defined (2) by the EPA.

(3) And with respect to the hazard index, (4) we calculated a hazard index of about .8, so (5) we're just below the threshold. This indicates (6) that it's unlikely that even sensitive (7) populations, such as children or older (8) individuals, are going to be affected by the (9) contaminants.

(10) On the other hand, the use of the (11) water from the injection well itself, what we (12) found with respect to total cancer risk is two (13) additional incidents of cancer per 1,000 (14) individuals.

(15) Okay. So you can see we're above the (16) acceptable range as levels established by the (17) EPA. In fact, it's fairly high.

(18) We also found a hazard index of 23. (19) That indicates that some of these sensitive (20) populations definitely may be adversely affected (21) by the use of the water that's contaminated from (22) the injection well.

(23) Okay. Well, with that in mind, (24) knowing that we have a risk, we went ahead and (25) proceeded into a

Feasibility Study. That's the

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(1) second portion of the Remedial (2) Investigation/Feasibility Study. That's where we (3) take a look at identifying remediation (4) technologies that may be viable for the problem (5) at the site; that's groundwater we're dealing (6) with.

(7) There are three basic stages to a (8) Feasibility Study. First, you want to identify (9) as many technologies as may be viable. Then you (10) want to screen them, the general categories.

(11) In each of these categories except the (12) No Action one, you see here there are several (13) technologies to quite a few, depending on the (14) general action.

(15) For example, institutional controls, (16) we might include an alternative water supply, or (17) fencing, or deed restrictions; something like (18) that.

(19) Containment technologies, we might (20) approve of grout curtains, where they inject (21) cement all the way down and they basically (22) provide or put in place a physical barrier.

(23) There's also hydraulic type (24) containment, where they circulate the (25) contaminated groundwater to prevent further

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(1) migration.

(2) And I'm just trying to give you some (3) examples in these different categories.

(4) Under the collection and removal of (5) contaminants, probably the most widely used (6) technology is extraction wells. Pull the (7) contaminated groundwater out of the aquifer, it's (8) then treated, and you can then reinject it. Or (9) as in the case of the interim action, we are (10) putting it in the disposal pond. Okay.

(11) Aboveground treatment actions, these (12) are really the treatment options or process (13) options that we use to take the contaminated (14) contaminants out of the media in question. It (15) includes things like air stripping, carbon (16) adsorption, ion exchange, things like that. (17) Okay.

(18) And then treatment-in-place (19) technologies are typically bioremediation type (20) technologies.

(21) Okay. Once we identify the list, the (22) full range of possible technologies –

and I (23) don't have the exact number, but I think the list (24) was about 30 or 40 technologies long, so quite a (25) few – what we wanted to do was screen them to

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(1) get them down to a handful that we could manage.

(2) And we do this using criteria (3) established by the EPA. Some of these criteria (4) include: Protection of human health and the (5) environment. Does it comply with federal and (6) state laws? Is it effective in the short term (7) and in the long term? How easy is that (8) technology to implement? What does it cost? (9) Things of that nature. And we also have public (10) and State acceptance, and that's why we're here (11) tonight.

(12) Okay. Well, what we did is we applied (13) the screening criteria to the range of (14) technologies and we came up with four basic (15) remedial alternatives that we felt were viable (16) for the Test Area North groundwater problem. (17) From that we selected a preferred alternative.

(18) And Dan will give you the specifics on (19) the four alternatives now.

(20) MR. HARELSON: The proposed plan (21) presents four alternatives for dealing with the (22) groundwater contamination at the Test Area (23) North.

(24) The first alternative presented is No (25) Action. And just as the name implies, nothing

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(1) would be done to either remove or contain the (2) contamination. We would monitor changes in the (3) groundwater plume over time.

(4) On limited action, which is the second (5) – well, back to no action, this is an (6) alternative that must be included in the (7) evaluation under the Superfund Law. It gives a (8) base line which everything else can be compared (9) to.

(10) On the Limited Action, this would be (11) preventing people from gaining access to the (12) contaminated water. This could either be done (13) through physical means by putting up fences, or (14) putting signs saying "don't drink the water." (15) It could be done with administrative (16) means, such as deed restrictions that say if you (17) buy this

land you can't install a well.

(18) It could also be accomplished by
(19) installing another water supply well,
well away (20) from contamination.
(21) AUDIENCE MEMBER: While
you're (22) changing the thing, you
remember back to Love (23) Canal. The
generator of the hazardous material (24)
that was discharged there put a deed
restriction (25) on the title when they
transferred the deed. The

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(1) City took it off, built a school on
there. (2) That's how effective deed
restrictions are.
(3) Live and learn from history.
(4) MR. HARELSON: That's not our (5)
preferred alternative, fortunately.
(6) Alternative 3 and Alternative 4 are
(7) very similar.
(8) Alternative 3, which is our preferred
(9) alternative, includes three main
pieces. The (10) first piece is
continuation of this interim (11) action
that I've spoken about.
(12) The second piece is an enhanced
(13) remediation system that focuses
again right there (14) on the injection
well. We believe that there is (15) still
some source material that's undissolved
in (16) the immediate vicinity of the
injection well.
(17) And then there is extraction and
(18) treatment of a portion of the
dissolved (19) contaminant. The
continuation of the interim (20) action
would be intended to continue
removing (21) contaminants while we are
designing and (22) constructing this
enhanced remediation system. (23) It
would also provide some measure of
hydraulic (24) containment. It would
slow the spread of (25) contaminants
from the injection well.

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(1) This enhanced removal uses an (2)
innovative approach, where we would
either inject (3) surfactants or steam to
enhance the removal of (4)
contaminants.
(5) That injected steam or surfactant
(6) would be recovered and treated.
The treated (7) water would be
reinjecting to the aquifer at (8) federal
drinking water standards or below
federal (9) drinking water standards.
(10) The third piece involves extraction
(11) and treatment of a small portion of
this (12) groundwater plume. The

remainder of the plume (13) would be
investigated, further investigated, and
(14) the remedial alternative for this wider
area of (15) contamination would be
addressed in the WAG-wide (16) and the
INEL-wide RI/FS. Again, we would (17)
continue monitoring changes in the
plume and we (18) would continue
preventing people from gaining (19)
access.

(20) Fourth alternative is very similar to
(21) Alternative 3. In fact, it's identical to
(22) Alternative 3, except we would
address a much (23) larger portion of
the plume.

(24) In theory, if we address this much
(25) larger portion of the plume, the
entire area of

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(1) contamination would be returned to
federal (2) drinking water standards by
the year 2040. 2040 (3) was selected
based on it being a reasonable (4)
estimate of when that part of the site
would be (5) available for non-DOE
uses.

(6) Alternative 3 is our preferred (7)
alternative, because it focuses on the
source. (8) In order to clean up this
wider area of (9) contamination, it's
necessary first to address (10) the
source. We believe that by deferring
the (11) cleanup of this wider area of
contamination, (12) we'll be building
flexibility into the process. (13) That
flexibility will allow us to adapt our (14)
approach. As we learn more about the
problems (15) from this cleanup effort,
we will be able to (16) adapt our
approach and ideally reduce our costs
(17) while still cleaning up the problem.
(18) So with that, I'll turn it back to (19)
Nolan.

(20) MR. JENSEN: Go ahead. We'll
just (21) have some
question-and-answer now.

(22) AUDIENCE MEMBER: When
you're talking (23) about the cleanup to a
5,000 parts per billion, (24) that's
normally the units you use for organics;
(25) right? Now, how does that – I
mean, where do

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(1) the radionuclides, the cesium, the
strontium, (2) tritium and those, come
in? Where do they fit (3) into that
determination? At what point, you know
(4) –

(5) MR. HARELSON: We're using – (6)

trichloroethylene is the most
widespread (7) contaminant, and we are
using it – if you (8) address the
trichloroethylene, you will address (9) the
remainder of it. What we were talking
about (10) doing on this preferred
alternative is returning (11) this portion
that's above 5,000, cleaning that up (12)
to the drinking water standard.

(13) We sometimes get loose with our
(14) terminology and limit this to TCE,
but it would (15) also address those
other contaminants that you (16)
identified.

(17) AUDIENCE MEMBER: And clean
them up to (18) drinking water standard,
whichever it is for that (19) particular
contaminant?

(20) MR. HARELSON: Right.

(21) MR. JENSEN: Any other
questions?

(22) And Dan and Greg will be here,
you (23) know, you can talk to them
one-on-one later, but (24) any other
questions?

(25) Okay. Why don't we go ahead
and go

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(1) right into the commentary, if you're
ready.

(2) What we do now is, we're opening
this (3) up for a formal comment portion
of the meeting. (4) And this is your time
to give a comment, so we (5) don't
respond to that. We don't – you know,
(6) it's not really a question-answer
period unless (7) we need to clarify to
make sure we understand the (8)
comment, so – and the comments will
be addressed (9) in a written response
in the summary of the (10) Record of
Decision, so –

(11) Yes, Reuel?

(12) MR. SMITH: I was going to ask
that we (13) might just check and see if
individuals need a (14) few minutes to
put those together before we (15)
actually go into it, because we really
haven't (16) had much of a
question-answer session, so they (17)
might need a minute to prepare
thoughts.

(18) MR. JENSEN: Okay. Is that true?
Do (19) you need a minute, Chuck?

(20) AUDIENCE MEMBER: I had
another (21) question, actually. There is
– the reason I (22) asked about the
plutonium and the cobalt was they (23)
had some pretty high concentrations in

the sludge (24) during the first remediation. The Pu-239 was at (25) 12.2 picocuries per liter, 241 was 123.6, the

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(1) tritium was at a million, americium-241 was at (2) 23.6, (indiscernible) at 6.6, cesium-137 at (3) 2,540, cobalt-60 at 812, which are pretty high (4) readings.

(5) The reason for asking that is that it (6) appears that that was a complete cleanup, at (7) least for those isotopes, and I'm surprised that (8) you wouldn't find some residual amounts there, as (9) you said?

(10) MR. STORMBERG: We haven't seen any of (11) those constituents in any of the groundwater (12) samples since that sludge was analyzed. I guess (13) the best I can say is that a lot of it depends on (14) how much sludge remains outside of that well. (15) And we don't know that.

(16) MR. HARELSON: I need to - we have (17) also been monitoring for those on the interim (18) action. We have had one hit of americium at (19) about .13 picocuries per liter. That was - I (20) don't have the numbers with me. Pu-234, 238, 235 (21) were also found. I don't recall the numbers. I (22) can get those numbers for you, if you'd like.

(23) MR. STORMBERG: Actually, I think I (24) just saw them here someplace.

(25) Seven picocuries per liter is the

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(1) highest I saw for 234 in one of the samples. But (2) a lot of it depends on how much is down there in (3) the sludge.

(4) AUDIENCE MEMBER: Well, that's above (5) the drinking water standard, and it would seem (6) that you'd have an obligation at least to (7) acknowledge that.

(8) MR. STORMBERG: For which (9) constituent?

(10) AUDIENCE MEMBER: Americium-

(11) MR. STORMBERG: 241?

(12) AUDIENCE MEMBER: Uranium-234.

(13) MR. HARELSON: 234 is identified as a (14) contaminant.

(15) AUDIENCE MEMBER: Okay. Okay.

(16) MR. JENSEN: Anything else

before the (17) comment period?

(18) I guess there are only three of you (19) here left that are public, or that aren't (20) affiliated with the project.

Were you all going (21) to give a comment? Any of you? Are you going to (22) give a comment, Chuck?

(23) Okay. Let's go ahead and open the (24) comment period now, and if you'd just state your (25) name at the beginning of that, we'll give you as

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(1) much time as you'd like. So go ahead and give (2) your comment.

(3) Do you want to go ahead, Chuck?

(4) And, sir, were you going to comment?

(5) AUDIENCE MEMBER: I'm still thinking (6) about it.

(7) MR. JENSEN: Okay. We'll get back to (8) you.

(9) MR. BROSCIOUS: My name is Chuck (10) Broschious, B-r-o-s-c-i-o-u-s. I'm executive (11) director of Environmental Protection Institute.

(12) It's real encouraging to see (13) improvements in the public literature that's (14) coming out, to see, you know, data that is - not (15) only states the maximum observed concentrations, (16) but besides that, the drinking water standard. (17) And, you know, that is a significant change from (18) the way things were done in the past. And it's (19) very helpful to have the information presented in (20) that way. I think it's a lot more candid and I (21) would put it as a significant improvement.

(22) The one reservation that I have about (23) the way the treated water is being discharged is (24) that if, in fact, it has the concentrations of (25) cesium - or strontium-90 at 30 picocuries per

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(1) liter, which is - I'm sorry, 300 picocuries per (2) liter, which is almost 300 times the drinking (3) water standard, being discharged into something (4) that is universally recognized as a failed (5) inadequate waste management approach, being the (6) percolation pond, is just really distressing to (7) see that that kind of continued practice is going (8) on.

(9) I would much rather see, as we've (10) recommended in our written comments, that if (11) indeed the treatment technology is not able to (12) extract enough of the strontium to get it

down to (13) drinking water standards, then at least it should (14) go into a lined evaporation pond.

(15) That's the extent of my comments right (16) now. Thank you.

(17) MR. JENSEN: Have you made up your (18) mind yet, sir? Would you like to comment?

(19) AUDIENCE MEMBER: I'll make a (20) comment.

(21) MR. JENSEN: Would you just give us (22) your name, please.

(23) MR. DECHERT: Yeah. My name is Tom (24) Dechert from here in Moscow.

(25) I guess what concerns me - I'm like

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(1) Chuck, I appreciate the more open nature in the (2) way that the information is being provided these (3) days and the more complete nature of the data (4) that's being provided.

(5) And similar to Chuck, I'm concerned (6) about evaporation ponds, and not only for (7) percolation reasons, but also for aerial (8) dispersment problems that may occur if there are (9) evaporation ponds. I'm not sure that those are (10) addressed adequately anyplace or that the data is (11) available, knowledge is available, to know (12) exactly what's going to happen with that stuff in (13) terms of aerial dispersment.

(14) But in terms of the characterization (15) of the site and the extent of contamination of (16) this site, I have some concerns about that as (17) well, and they relate to comments I've made at (18) previous meetings here, in terms of the fact that (19) just looking at your sampling scheme, for (20) instance, for this water plume, I have a hard (21) time seeing how you can have a high level or (22) degree of confidence that you have adequately (23) described the degree of contamination there.

(24) And I think by virtue of the fact that (25) you're getting stuff back out of the injection

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(1) well that you haven't seen before, you're seeing (2) things that are surprising you as you go along, (3) is an indication that there is some lack of (4) understanding, I think, of degree of (5) contamination in the aquifer, and not only that, (6) but how the aquifer works

at that site, or (7) anyplace else, as far as that goes, under the (8) INEL.

(9) I'm not fully convinced that - what (10) should I say - well, first off, having to do (11) with the interbeds, that the characterization of (12) those interbeds as you have described them and (13) they were also described to me outside of this (14) meeting can fully explain - if we're talking (15) about basalt - what's going on with the (16) containment of the contaminants that are down (17) there.

(18) In other words, I would have - I just (19) have a feeling that there's more to the (20) interbeds, the silts and the clays, that are (21) occurring in the aquifer, than you have a good (22) handle on.

(23) And it disturbs me, I guess, that the (24) models you use when you're looking at those or (25) when you are describing those, what's going to

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(1) happen with these plumes of these - the movement (2) of contaminants in the future are based on (3) assumptions of the clays, the silts and the (4) basalts in the aquifers that I don't think are (5) very well documented or very well substantiated (6) in your data base.

(7) MR. JENSEN: Is that it?

(8) Okay. By the way, you can still - (9) like I said, the comment period goes till (10) June 17, and on the back of the proposed plan (11) there is a postage-paid comment page here that (12) can be submitted through June 17, so if you'd (13) like to, submit additional comments. And also (14) within the proposed plan there are locations (15) where the Administrative Record is located and as (16) well as phone numbers for each of the agencies, (17) if you'd like to get more information.

(18) So with that we'll go ahead and close (19) our comment period. Like I said, the other part (20) of our meeting is going to last - I think your (21) presentation lasts about 15 minutes, T. J., (22) something like that, maybe even less. So we'll (23) take a few minutes break here while he sets up, (24) then we'll do the second part.

(25) (Recess.)

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(1) MR. JENSEN: The second part of the (2) meeting tonight is, as we mentioned earlier, (3) dealing with

several preliminary investigations (4) we did. Back when we signed the Federal Facility (5) Agreement three years ago, three and a half years (6) ago now, we knew there were some issues at the (7) site, like the TAN groundwater we talked about (8) earlier for example. We knew that those were (9) issues we had to deal with. We knew there was (10) contamination there and there were significant (11) problems that needed significant investigation (12) and evaluation.

(13) But all together there were 400 sites (14) that were identified at that time, over 400. And (15) several of those were much smaller. They were (16) someone knew that there was an oil spill, or (17) someone thought that there was an acid spill. (18) There were several underground storage tanks.

(19) And so what we did is, rather than (20) throw all those into a large, extensive (21) investigation, we wanted to do a screening level, (22) look at those first to see if they warranted (23) further investigation or whether there was just (24) not much of an issue there. (25) So what we set up was a couple

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(1) preliminary investigation processes that we (2) called Track 1 and Track 2.

(3) And essentially a Track 1 was to go (4) out and look at existing data, see if we could (5) use any existing file information to evaluate the (6) site and come up with some sort of a (7) determination there.

(8) Track 2 is very similar, only it's a (9) little more extensive. We actually go out and (10) take some samples, do a little bit more intensive (11) data selection effort there.

(12) But in both cases, generally what we (13) do is we end up, based on that evaluation, (14) deciding that there really is no issue there, or (15) that it's small and there is no significant (16) threat, or that it's something we can clean up (17) rather quickly, so we do a - what we call a (18) removal action and clean it up. Or that we find (19) out that there is a significant issue there, at (20) least significant enough that we need to evaluate (21) it further and investigate it further. And so in (22) that case, we would probably roll that site into (23) one of our larger investigations.

(24) But what we're taking about

tonight is (25) several of the Track 1 investigations that, after

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(1) going through the evaluation, we made the initial (2) determination that there really wasn't a big (3) enough issue there to address it further.

(4) And so this is the second proposed (5) plan that we've done that with that we're now (6) going back to some of these determinations that (7) we have made preliminarily and now we're bringing (8) those out to the public and saying, this is what (9) we found on some of those smaller sites. And (10) we'll probably be doing that more each time as we (11) complete these investigations.

(12) So I'll now introduce T. J. Meyer from (13) EG&G who will talk about these Track 1s for a few (14) minutes.

(15) MR. MEYER: Thank you, Nolan.

(16) There are 40 Track 1 sites at Test (17) Area North. Today we're going to be talk about (18) 31.

(19) The other nine sites we're not talking (20) about tonight have been completed, and what we've (21) been able to determine is that there is something (22) there, an additional problem that needs further (23) investigation, further resolution; so they'll be (24) presented at a later proposed plan and then a (25) ROD.

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(1) 31 sites we have completed and (2) prepared to present to the public tonight can be (3) categorized into 18 former, or currently (4) inactive, underground storage tanks; ten (5) potentially contaminated soil sites - (6) And I say the word "potentially," (7) because the initial information that we had five (8) and eight years ago when these sites were (9) identified and put on some list was that there (10) was a potential for some contamination out there, (11) the site had some debris on it, there was some (12) historical indication that there was something (13) out there. The Track 1 investigation's purpose (14) was to go out there and characterize what was out (15) there. (16) - and then there were three (17) wastewater disposal sites.

(18) Each of these Track 1 investigations (19) had a large - or had a 30- to 50-page report (20) prepared where we went out and collected all the

(21) historical information, the process knowledge of (22) what happened at past times, 30, 40 years ago, at (23) each of the sites. We tried to collect (24) photographs at each of the sites to identify what (25) the condition of the site was during its use. We

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(1) talked to employees who were out using the sites (2) or were familiar with the operation at the (3) sites. Then we conducted site visits, and in (4) many cases conducted sampling to find the current (5) site conditions in the soils and around the sites (6) themselves. (7) Then we took that information and put (8) it together in a risk evaluation and then (9) presented it to the agencies to make the (10) recommendations.

(11) An example of what these Track 1 (12) reports look like is presented here, and it's a (13) standardized format that was identified in the (14) Federal Facility Agreement, and the guidance (15) manual was prepared, and all of the Track 1s have (16) met the approach of the guidance manual.

(17) There's about 10 or 15 pages of (18) historical information, probably 10 or 15 pages (19) of site-specific analytical data, and about 10 (20) pages of risk assessment information.

(21) I have two binders back here with all (22) 31 of the Track 1 investigations, if someone is (23) interested in them. And they are also as part of (24) the Administrative Record.

(25) The sites occur across the TAN

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(1) complex. Earlier we heard a description of each (2) of the complexes: The Loss-of-Fluid Test (3) Facility; the Initial Engine Test, which is (4) located north; and then the Technical Support (5) Facility, which is the main center facility; and (6) then the Water Reactor Research Test Facility is (7) southeast.

(8) All of the sites have some of the (9) Track 1 sites present. All of them have (10) underground storage tank sites which we are (11) discussing tonight. They're shown in the purple (12) or violet color in each of the photographs.

(13) Only the Loss-of-Fluid Test Facility (14) and the Technical Support Facility have (15) contaminated or potentially contaminated soil (16) sites shown in the green.

(17) The three wastewater sites all occur (18) at the Water Reactor Research Test Facility, and (19) they're shown here in blue. And the types of (20) water that were discharged here were processed (21) water and sanitary water. Mainly, the reactor (22) use of these facilities is very low-power, (23) bench-scale small reactors.

(24) The results of the 31 Track 1 (25) investigations showed that 23 sites had no

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(1) contamination present at all. In the historical (2) information, there was no indication that there (3) was any contamination present, or the sampling (4) information showed that there was no (5) contamination present.

(6) Nine of sites, a problem was (7) identified and they need to be investigated (8) further. More thorough sampling investigation (9) has to be done at each of those sites.

(10) Eight of the sites, contamination was (11) found. And they're shown here in the table. (12) Each of the major facilities shown on the board (13) had one of these sites where contaminants were (14) found. The type of site is shown here in the (15) second column.

(16) Basically, the types of sites and the (17) types of contaminants can be broken down into two (18) types, mainly, sites related to use of (19) underground storage tanks, mainly petroleum, (20) hydrocarbon, contaminants from fuel oils, waste (21) oils, or from motor oils. And then one (22) contaminated site had radionuclide detected at (23) it.

(24) AUDIENCE MEMBER: Which site is that?

(25) MR. MEYER: It's TSF 36.

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(1) AUDIENCE MEMBER: Could you point that (2) out on the drawing so we can see where that one (3) is?

(4) MR. MEYER: That one is located right (5) here. That's TSF.

(6) AUDIENCE MEMBER: My understanding is (7) that they had at that particular area some five (8) or six radioactive waste holding tanks. Have (9) they been put into this list? Have they yet to (10) be evaluated? Some of those had serious leaks in (11) the past.

(12) MR. MEYER: Those were identified as (13) Track 2 sites, where it was clear there was (14) something

there, but we didn't know fully what (15) was the problem. And Track 2 site allows us to (16) do a more complete investigation. These all take (17) between six and nine months to actually do the (18) paperwork and get all the information together, (19) whereas the Track 2s take up to 18 months to (20) collect data.

(21) So yes, there's 24 Track 2 sites, and, (22) in fact, all of the sites that you're talking (23) about were looked at last year and we're (24) completing some of the reports now on that (25) information.

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(1) AUDIENCE MEMBER: Okay.

(2) MR. MEYER: But essentially - I don't (3) know how familiar you are with the TSF facility, (4) but there is a large, natural earthen hill, it's (5) like an embankment, and they enlarged it and it (6) acts like a dike for shielding. And everything (7) to the west of this is radioactive, and (8) everything to the east is essentially (9) nonradioactive, or nonradioactive activities went (10) on.

(11) In this one case here, there was (12) cesium found in a surface water drain.

(13) MR. JENSEN: Show where the V tanks (14) are.

(15) MR. MEYER: The V tanks are located (16) here around the hot zones, and all of these were (17) -

(18) AUDIENCE MEMBER: You call them V (19) tanks?

(20) MR. MEYER: I don't know why. But (21) it's part of an evaporator process, and so the V (22) stands for evaporation.

(23) MR. HARELSON: The V tanks are in - I (24) think they're Operable Unit 1-05.

(25) MR. MEYER: Is there anything else you

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(1) want to talk about, any of these other sites or (2) locations?

(3) AUDIENCE MEMBER: No.

(4) MR. MEYER: I'll just put this one out (5) front.

(6) The risk assessment done on the eight (7) sites where contaminants were found looked at (8) both carcinogenic and noncarcinogenic type (9) contaminants.

(10) The two carcinogenics that we were - (11) that we detected on our

sampling was benzene at (12) one of the petroleum underground storage tank (13) sites, and cesium-137.

(14) And the risk assessment that looked at (15) the contaminant that was actually detected at (16) those sites, the risk assessment showed that the (17) risk level was below, the acceptable risk range, (18) which means that there is an acceptable risk at (19) these sites. The contaminants were way below the (20) 10-to-the-minus-6 risk level.

(21) For the noncarcinogenic contaminants, (22) the toluene, ethyl benzene and xylene, the risk (23) assessment showed again that the contaminants (24) were below the hazard index of one, which means (25) that sensitive populations are not likely to be

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(1) adversely affected by these contaminants.

(2) On page 14 of the proposed plan, (3) there's a table and it shows potential risk (4) levels that you would need. In the first two (5) columns are the carcinogenic compounds, that's (6) cesium-137 and benzene, and it shows for each of (7) those sites how much of the contaminant would (8) have to be there to pose a risk of 10 to the (9) minus 6 right here.

(10) And if you flip to page 20, TSF 36 is (11) shown there, and we had 6.5 picocuries of cesium (12) detected at that site. And at the second (13) paragraph, the bottom part of that second (14) paragraph, it shows results were 6.5 picocuries (15) per gram of cesium-137.

(16) If you go back to Table 3 on page 14, (17) you can see that the various pathways of the soil (18) ingestion is probably the most sensitive in this (19) case, and you'd need greater than 200 – you'd (20) need 280 picocuries per gram. It says "parts per (21) million," but it's a typo. You need 280 (22) picocuries per gram. So you can see we're an (23) order of magnitude below what you'd actually need (24) to pose a risk.

(25) AUDIENCE MEMBER: Say that again.

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(1) What's a typo?

(2) MR. MEYER: Underneath "soil (3) ingestion."

(4) AUDIENCE MEMBER: When you

say there (5) would have to be less than a million picocuries (6) per gram air volatilization for cesium-137 in (7) order to pose a risk, that's basically what this (8) means?

(9) MR. MEYER: No. What this is saying (10) is that, say for the air inhalation, you would (11) need greater than a million picocuries per gram (12) there for air inhalation hazard.

(13) AUDIENCE MEMBER: How does that (14) translate down to the 4,000,000 grams per year? (15) Does that –

(16) MR. MEYER: You're talking about a (17) full body dose or gamma dose. Cesium poses a (18) very large whole body or organ damage, which this (19) didn't look at. This looked at the air (20) inhalation in taking it into the body. The (21) exposure of somebody coming up with direct (22) exposure isn't shown here.

(23) AUDIENCE MEMBER: I can't imagine (24) anybody even surviving being exposed to, you know (25) –

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(1) MR. MEYER: You're right.

(2) AUDIENCE MEMBER: – 999,000 (3) picocuries per gram of cesium-137 in a gram of (4) dust, if it got in their lungs.

(5) MR. MEYER: You're right, and that's (6) what this is showing. You know, the risk level (7) from ingestion pathway or inhalation pathway is (8) not really a very valid pathway. You know, you (9) need so much of it there that it really impacts (10) other pathways that you look at. So you realize (11) that the direct exposure pathway is really the (12) most sensitive. It's not listed here, but it was (13) evaluated.

(14) AUDIENCE MEMBER: That brings up an (15) issue, though, about what data do you really have (16) to support air inhalation and dust movement (17) around the INEL? Are you doing this based on (18) assumptions or do you actually have data on the (19) amount of dust that's being picked up and moved (20) around the INEL?

(21) MR. MEYER: There is another group, (22) the environmental monitoring group, that does do (23) the sampling around the facilities. I don't know (24) much about that.

(25) Nolan, do you?

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(1) MR. JENSEN: No, I don't know that (2) much about it. The only

experience that I've had (3) with that is when we did the Warm Waste Pond at (4) TRA, and we used some of their data, particulate (5) data, just to do that evaluation of that. And (6) the reason we did that, it would be a real (7) conservative assumption, and we said, okay, this (8) is all the particulates coming into the facility, (9) what if we assume that every bit of that (10) particulate was out of the Warm Waste Pond. And (11) we did that to see, you know, what kind of risk (12) that might pose. But that's really the only time (13) I dealt with that data.

(14) AUDIENCE MEMBER: To my knowledge the (15) data doesn't exist. All of those sorts of things (16) there are based on assumptions on dust movement (17) down there and without – as far as I know – any (18) data at all, any ground truthing at all.

(19) MR. MEYER: There is some additional (20) data that is available. And like I said, I know (21) they do large area gamma surveys around all the (22) facilities, and we just don't see a whole lot of (23) wind-borne movement.

(24) AUDIENCE MEMBER: Aren't those numbers (25) in the table independent of where you are?

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(1) MR. MEYER: The numbers in that table (2) say no matter where you were, if you were (3) inhaling that dust, that amount of dust, there (4) would be a problem.

(5) What we're finding is we have much (6) less than those numbers in this particular site.

(7) So I'm not certain where those numbers (8) were developed, but they are independent of (9) whether it's at the INEL or whether it's at Rocky (10) Flats. (11) It's whether you inhaled that dust (12) anywhere. And it's independent of the source of (13) that dust. So we're comparing what we have in (14) this particular site against –

(15) AUDIENCE MEMBER: You're saying that (16) dust has to have a million picocuries per gram of (17) dust inhaled to present a risk?

(18) MR. MEYER: Through inhalation. So (19) then the other numbers – there are numbers in (20) the table there, so if you inhaled it, that much, (21) it wouldn't cause a problem through inhalation. (22) It might cause – the next number in the

table (23) addresses ingestion, and that's much lower. So (24) there is - while you could inhale that much and (25) not have a problem, you could not eat that much.

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(1) because you would have a problem there.

(2) AUDIENCE MEMBER: I don't understand (3) what -

(4) MR. MEYER: Jeff, do you want to -

(5) MR. FROMM: Yeah. The amount of (6) particulate that would be available for any (7) particular receptor is determined by model (8) recommended by EPA. And with the model, you are (9) able to input site specific kinds of information, (10) such as vegetative cover, average wind speed, (11) things like that. So, yes, there are assumptions (12) involved, there are approximations, certainly in (13) the inhalation pathway.

(14) AUDIENCE MEMBER: That's what I said.

(15) MR. FROMM: But what you're saying is (16) that it is dependent on environmental conditions.

(17) AUDIENCE MEMBER: Well, indicative of (18) environmental conditions. And that's seems to me (19) if it's independent of environmental conditions, (20) then all of rest is meaningless. If you're (21) saying that we can inhale a gram of soil that's (22) got, as Chuck said, 999,000 picocuries per gram (23) of that soil, it's just (Indiscernible) INEL and (24) still be safe.

(25) AUDIENCE MEMBER: Be safe from

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(1) inhalation, but you would not be safe from (2) ingestion. There are different ways that you can (3) be damaged by radiation, and it's an imperfect (4) approach, but you have to look at: Okay, how (5) much would it take to damage me if I inhaled it (6) all? How much would it take to damage me if I (7) ate it all?

(8) And you go and you find the lowest (9) level that would cause damage and you compare (10) what you have to that lowest level. And if you (11) were below the lowest level, you have an (12) acceptable risk. If you are above that lowest (13) level, there is a problem.

(14) Do you follow what I'm saying?

(15) MR. MEYER: Let me take a different (16) pathway. Groundwater is a little easier to (17) understand. And the way on these Track 1s we (18) evaluate that, we would take a very conservative (19) model and say, okay, if I have a site up here (20) that's 10 feet by 10 feet by 10 feet deep, if I (21) took that chunk of dirt, how much concentration (22) of contaminant would I have to have in that piece (23) of dirt to cause a contamination in the aquifer (24) below drinking water standards.

(25) And then we take a very conservative

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(1) approach, and say we find out for example that (2) you would have to have a thousand parts per (3) million of lead to cause a problem in the (4) aquifer, using a very conservative model. Then (5) we say, okay, it would take a thousand parts per (6) million to cause a problem. If I've only got (7) five parts per million, then I'm pretty (8) comfortable that it's not a problem. And that's (9) kind of the approach we're taking here.

(10) MR. FROMM: I think I can add one more (11) thing on inhalation.

(12) When I talk about site specific (13) information which would be inputted in the model (14) for particulate inhalation, one of the things (15) that it is more sensitive to is the actual (16) dimensions of the site, which are not INEL (17) specific, but it's just either a large site or a (18) small site. This was a very small site. And I (19) think if you had a larger site you'd see that the (20) number would change really dramatically.

(21) So you could have this concentration, (22) but let's say if you were in a standard (23) residential lot, this site would represent a (24) small portion of that. So there's a dilution (25) effect. If you were standing on a large plain

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(1) that had this concentration, then the risk number (2) would be different. But this is a very small, (3) isolated area.

(4) AUDIENCE MEMBER: How small is it?

(5) MR. MEYER: It's a three-foot diameter (6) french drain, surface water french drain. The (7) other analogy in that was a football-field size (8) with that

concentrated (Indiscernible). Well, (9) the point is that it is size of the contaminated (10) area, and I believe the groundwater ingestion is (11) the same situation because of what we have, a (12) soil concentration which would provide a kind of (13) 10-to-the-minus-6 risk in groundwater, so we'd (14) have to model it to groundwater. And also the (15) size of our source is going to be a factor (16) there. So I think the main factor here is size. (17) That is kind of an unusual case, because it is (18) very small.

(19) MR. MEYER: And the effect of how the (20) site size affects risk range shown in the other (21) contaminants here, like the range for the air (22) volatilization refers to 111 ppm, and that was (23) just a function of size of site. The smaller the (24) site, obviously, the more contaminant you would (25) need to be there for a standard residential lot.

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(1) That's a good point. Thank you.

(2) MR. FROMM: And there was only the one (3) site with cesium. That's why there are only (4) single numbers.

(5) MR. MEYER: And I apologize for not (6) having the direct exposure pathway on here. The (7) table was set up with petroleum sites in mind (8) first, so they don't have a direct exposure route (9) on radiation exposure route and I didn't put that (10) pathway on there. I can find that number if (11) you're interested.

(12) AUDIENCE MEMBER: Well, I think that (13) something that would be a little bit more (14) meaningful to me is to compare this exposure (15) table to the four-millirem-per-year EPA and State (16) exposure level. You know, how bad does this (17) pathway have to be before you exceed the four (18) millirems?

(19) MR. MEYER: And that's the direct (20) exposure route.

(21) MR. JENSEN: Actually, though, the (22) four millirem is a drinking water standard, and (23) so it's kind of tough.

(24) AUDIENCE MEMBER: Right.

(25) MR. JENSEN: And that assumes you're

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(1) taking the water and putting it into your body, (2) but you can't really compare what are the (3) concentrations just sitting there on the ground (4) and

I'm just getting gamma dose off of that to my (5) whole body. It's really not a good comparison to (6) if I drink water with that in it. And so I know (7) where you're coming from, but I'm not sure we can (8) do it.

(9) AUDIENCE MEMBER: Well, that's an (10) inadequacy in the standards then. Actually, (11) they've got some standards on the way.

(12) MR. FROMM: The existing and the (13) proposed drinking water standards are actually, (14) for most of the risks, they work out to a higher (15) risk level than one in a million. Many of the (16) rads are between -

(17) AUDIENCE MEMBER: Certainly the (18) proposed ones.

(19) MR. FROMM: Yeah, well, they're often (20) between 10 to the minus 4 and 10 to the minus 5, (21) so we take 10 to the minus 6 as a starting point, (22) which is actually more conservative than if we (23) were relying on (indiscernible).

(24) MR. JENSEN: One of the biggest (25) struggles we have is trying to come up - and

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(1) that's, I think, what you're referring to - is (2) come up with what is an acceptable surface (3) concentration of radiation. And there's a lot of (4) people that have been discussing that for along (5) time and EPA has been trying to come up with a (6) number for that. I've seen things come across my (7) desk just recently, in fact, but I didn't read it (8) yet.

(9) AUDIENCE MEMBER: It's only about that (10) thick.

(11) MR. JENSEN: I was thinking more like (12) that. But they are working on it.

(13) AUDIENCE MEMBER: The status report (14) for cleanup standards.

(15) MR. JENSEN: Yeah.

(16) AUDIENCE MEMBER: I've always been (17) going by the assumption that inhaling a (18) contaminant, particularly, you know, radionuclide (19) or something like that, because the lungs don't (20) really have as easy a means of purging (21) contaminants out of it, that that pathway is (22) actually more injurious biologically than through (23) gastrointestinal.

(24) AUDIENCE MEMBER: Well, that's true (25) for alpha emitters, but not gamma or beta, the

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(1) reason being that the gamma is more of an x-ray (2) type emission or energy, it passes right through (3) and does very little cell damage, whereas the - (4) and the beta particle is very small, but the (5) alpha particle is fairly large. It's much (6) larger. Although it doesn't move as far because (7) of its size, it does a lot of cell damage, so the (8) gamma emitters are very high inhalation risk (9) hazards, while alpha emitters, which americium, (10) plutoniums and uraniums are -

(11) AUDIENCE MEMBER: Well, that's not to (12) say that beta and gamma don't do any harm. You (13) can't say they don't do any harm.

(14) AUDIENCE MEMBER: That's right, the (15) alpha's -

(16) AUDIENCE MEMBER: It's a relative (17) thing. Cesium is pretty hot stuff. You don't (18) want to mess with that no matter.

(19) MR. MEYER: The other contaminants (20) shown in that table, you can get an idea of the (21) comparison of the numbers that we found at some (22) of the sites on page 15. The first site shown, (23) IE-210, the contaminant xylene was 2.3 parts per (24) million found in the soil. And when you look at (25) the risk range that is presented in the table,

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(1) you can see we're far below those. So from a (2) site use and historical use and from a risk point (3) of view, these sites were considered at a very (4) low risk.

(5) In summary, the agencies have (6) recommended no further action based on the fact (7) that for the first 23 sites the findings showed (8) that the historical records, the field sampling, (9) no contaminants were present; and for the (10) remaining eight sites, the risk assessment (11) indicated that the contaminants posed an (12) acceptable risk level.

(13) If there are any questions, I'd be (14) glad to address any more at this point.

(15) AUDIENCE MEMBER: Surely you could put (16) there for groundwater ingestion the - why (17) couldn't you put the 119 picocuries per liter?

(18) MR. JENSEN: That assumes - I think (19) what you're saying is 119

picocuries per liter (20) equates to the four millirem. Is that what (21) you're saying?

(22) AUDIENCE MEMBER: It's close to it.

(23) MR. JENSEN: The reason - I mean, you (24) can do that, but the problem with that is, if I (25) have, for example, cesium and cobalt and a couple

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(1) of others, the four millirem is from all of (2) them. And so if say cesium-137 is 119, and (3) that's true, it's only true if I don't have (4) anything with else with that.

(5) MR. FROMM: Again, we're talking about (6) soil contamination, soil concentration versus (7) water concentration, so -

(8) MR. MEYER: This is what would be (9) needed in the soil at the site to make it down to (10) the water table as a posed risk.

(11) MR. FROMM: Right.

(12) MR. MEYER: This isn't what you would (13) drink in the water. This is what would need to (14) be at the site to migrate down to the water table (15) to pose a 10-to-the-minus-6 risk.

(16) AUDIENCE MEMBER: I'd strongly (17) recommend in the future that if you continue to (18) use these kinds of tables you're going to have to (19) have a whole lot more text explaining what the (20) table means, because it's not there. I mean, I'm (21) still not real sure I understand it. But, you (22) know, fine, if you want to use that, but you're (23) going to have to explain what these numbers mean.

(24) MR. HARELSON: You should have seen it (25) before we revised it.

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(1) AUDIENCE MEMBER: I question whether (2) that's even the appropriate way to look at the (3) risks, to quantify the risks.

(4) MR. JENSEN: The problem we've got, (5) for example, groundwater is easier to understand, (6) so I'll use that one.

(7) If I've got, say, an oil spill out (8) here, I mean, obviously I could go out and drill (9) a well and see if that oil spill had contaminated (10) the ground water. But we know it hasn't. We (11) know there's no way for that oil spill to have (12) already gotten down to the

groundwater, so it's (13) kind of pointless to drill a well 400 feet deep (14) to check it. So what we're trying to do is say, (15) okay, I know I've got the oil spill here, I'll (16) sample it. Someday that might – there might be (17) enough rainwater to flush that clear to the (18) aquifer. We've got to come up with some way to (19) evaluate if there's enough contaminate there to (20) cause a problem in the groundwater.

(21) And so what we are doing is coming up (22) with hopefully very conservative models, so that (23) when we say, okay, I think it would take for (24) example 1,000 parts per million to cause a (25) problem, that when we say, okay, I've only got 10

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(1) or 50 or 100, then I'm pretty sure that it's not (2) going to be a problem in the future. Because (3) like you say, it would be nice to be able to (4) punch a well and say, okay, it's not a problem (5) because there is nothing in the aquifer, but –

(6) AUDIENCE MEMBER: No, that's not what (7) I'm saying. I'm saying the opposite. I'm saying (8) that the concentration that's sitting there on (9) the soil surface has some intrinsic hazard in (10) itself, irrespective of its relationship to the (11) aquifer, or humans, or – I mean, there's other (12) things, there's vegetation and animals that you (13) guys haven't even considered, that there is an (14) intrinsic pollution there if that oil is sitting (15) there on the surface of the ground. That's a (16) pollutant, irrespective of what your models say (17) about when it's going to get to the aquifer.

(18) AUDIENCE MEMBER: Just remember, this (19) is the same country, you know, where the Big Lost (20) River disappears.

(21) MR. JENSEN: No argument there. But (22) all we're trying to do is come up with a – and (23) the way we did these Track 1s was to come up with (24) a way to evaluate these smaller sites to get a (25) feel for if it's even worth evaluating further.

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(1) And there is –

(2) Go ahead.

(3) MR. FROMM: Well, and I think another (4) important point is, it doesn't mean the book is (5) permanently

closed on these. If there are areas (6) – any contamination of any of the sites, (7) Track 1, Track 2, in more detailed remedial (8) investigations will be evaluated as part of a (9) comprehensive evaluations, each Waste Area Group, (10) and this will include human health evaluation, (11) ecological

(12) AUDIENCE MEMBER: We've heard that a (13) number of times. We know that's going to (14) happen.

(15) MR. MEYER: One of the things I would (16) like to point out is that the way these Track 1s (17) were set up is they looked at the sites from (18) three points of view, and the first was (19) historical use, and the other one was from (20) sampling data, go out and sample what's there, (21) the other was from a risk assessment.

(22) And each one of those was kind of (23) considered to be an independent leg, an (24) independent way of looking at the site. And if (25) there was anything about either one of those

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(1) potential possibilities of what you knew or (2) whether the uncertainty was greater or if there (3) was a lot of uncertainty about information from (4) the historical use of the site, those sites were (5) automatically suspect, and additional information (6) was required at many of them.

(7) For the one where the cesium was (8) detected in the surface water drain, we had a (9) contaminant level of 6 picocuries, and the only (10) historical information about that site was we had (11) a known release of one gallon, is what we know (12) went to that one spot.

(13) So with that information, it seemed (14) like there was a very low potential for that (15) site, it wasn't a site that routinely received (16) contaminants through time.

(17) And the same with the underground (18) storage tank sites. We either had no indication (19) that the tanks leaked, or there were no holes in (20) the tanks, the piping hadn't leaked, and when you (21) sampled around them, we found very low levels or (22) non-detects for sample.

(23) So it wasn't just we were relying on (24) just the risk assessment to say there wasn't a (25) problem there, but we were

looking at a whole

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(1) body of data to make our recommendations from.

(2) AUDIENCE MEMBER: That's my other (3) comment about these in terms of I'm wondering why (4) the wastewater disposal sites weren't sampled.

(5) MR. MEYER: I believe we do have (6) monitoring data from the effluent from those.

(7) AUDIENCE MEMBER: Well, to read the (8) reports here –

(9) MR. MEYER: More historical (10) information showed that there was just no (11) contaminant that ever went out to that site. And (12) site visits, when you went out there, there was (13) no obvious staining, there was no obvious (14) vegetation stress.

(15) AUDIENCE MEMBER: Well, still to (16) follow your third leg hypothesis seems to me (17) there should have been sampling, and I just feel (18) like observing vegetation stress doesn't tell me (19) very much. Soil staining in that environment (20) doesn't tell me very much. I mean, none of those (21) other criteria used tell me very much about some (22) of the potential pollutants that could be in (23) those waste water ponds. I'm just wondering why, (24) if that third leg is important to you, why it (25) wasn't done.

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(1) MR. MEYER: Well, it says, records (2) indicate. That means monitoring data, because (3) what we have for those effluent monitoring data, (4) because those ponds were up into use until the (5) late '80s, so we still have some monitoring (6) data. And it says records indicate that only low (7) concentrations; and they sample for a whole range (8) of things.

(9) AUDIENCE MEMBER: We know what the (10) records at INEL were like. They were hardly (11) complete.

(12) AUDIENCE MEMBER: I think if you're (13) going to completely analyze just these few (14) paragraphs, I do believe those backup records are (15) in the Administrative Record that go through a (16) lot of this information and evaluate how accurate (17) it might be, and it has the actual records in (18) there, so there's a lot of information that (19) couldn't be summarized in the proposed plan, but (20) it's in the

Administrative Record.

(21) MR. MEYER: Yeah, I can show you the (22) waste water reports and what they look for.

(23) MR. JENSEN: I was just going to say, (24) we're kind of getting to a point now where we're (25) getting comment more than questions. Can we go

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(1) ahead and do the comment period now, and then we (2) can talk more if you like later? Is that (3) appropriate? Is that okay?

(4) AUDIENCE MEMBER: I made my comment.

(5) MR. JENSEN: Are you guys comfortable (6) that you can go back to the record and get the (7) comment out of that, or can we ask you to maybe (8) give it as a comment again.

(9) MR. DECHERT: I just, as a comment, I (10) think that those wastewater treatment or (11) wastewater disposal sites, the soils should be (12) sampled and fully analyzed, because I think the (13) records are, you know, incomplete.

(14) MR. JENSEN: Again, during the comment (15) period, we're not going to respond.

(16) Chuck, did you want to comment?

(17) MR. BROSCIOUS: That was what I had (18) underlined, too, the fact that it says here (19) "although no soil sampling was conducted," "no (20) soil sampling conducted," "although no soil (21) sampling conducted," and it goes on and on. You (22) know, good gosh, that doesn't sound to me like a (23) very reasonable way to approach that kind of (24) assessment.

(25) MR. JENSEN: Did you want to comment,

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(1) sir?

(2) AUDIENCE MEMBER: No, I'm all set. (3) I'm just here to learn.

(4) MR. JENSEN: Okay. Anybody else?

(5) Let's go ahead and close the comment (6) period then.

(7) Remember again that the comment period (8) is open until June 17 - which is a week from (9) Friday, is that right? Something like that. And (10) so you can submit comments any time. And this (11) basically concludes our meeting, so if you'd like (12) hang around and talk to these folks, we'd be

(13) willing to do that. Thanks for coming.

(14) (Meeting concluded at 8:43 p.m.)

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(1) REPORTER'S CERTIFICATE (2) STATE OF IDAHO)

) ss. (3) COUNTY OF ADA)

(4) I, DENECE GRAHAM, Certified Shorthand (5) Reporter and Notary Public duly qualified in and (6) for the State of Idaho do hereby certify:

(7) That said hearing was taken down by me (8) in shorthand at the time and place therein named (9) and thereafter reduced to computer type, and that (10) the foregoing transcript contains a true and (11) correct record of the said hearing, all done to (12) the best of my ability.

(13) I further certify that I have no (14) interest in the event of this action.

(15) WITNESS my hand and seal this 8th day (16) of July, 1994.

(19) DENECE GRAHAM, C.S.R. and NOTARY PUBLIC in and for

(20) the State of Idaho.

(25) My Commission expires April 21, 2000

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1 MR. JENSEN: My name is Nolan Jensen.
2 I'm from the Department of Energy. Since there
3 are so few of you here, I mean, several of us
4 work on the project, and we know who we are, but
5 since there are so few of you, we're going to be
6 really informal tonight, and hopefully just
7 answer your questions and have a dialogue.

8 Couple things I wanted to cover before
9 we get started. First of all, let me go ahead
10 and go to this chart. Really the reason that
11 we're here is, like I said, just to talk to you,
12 answer questions, anything you want to know about
13 the project, and then we do have a court reporter
14 here, because we have a formal comment period.
15 We're in the comment period for the cleanup
16 project and it goes until June 17, so that's kind
17 of outlined here what we're here for.

18 I'm going to just briefly talk about
19 -- kind of set the stage for how these projects
20 all come together. In 19 -- end of 1991, there
21 was an agreement that was signed between the
22 Department of Energy, the Environmental
23 Protection Agency, the State of Idaho, and that
24 was to do all of the environmental cleanup and
25 investigation work at the INEL.

1 And what we did is, there are several
2 facilities out at the INEL, and we divided those
3 up and called each facility basically a Waste
4 Area Group. And tonight we're talking about Test
5 Area North, which is one of the facilities, and
6 it's Waste Area Group No. 1. And what we did is
7 there were several locations in each facility
8 where there were known contaminated sites or
9 potential contaminated sites and we divided those
10 all up into what we call Operable Units. That's
11 just a way to divide the sites up into similar
12 problems, so we could attack it in a more
13 organized fashion.

14 And tonight we're talking about Test
15 Area North. There are ten Operable Units there.
16 One of them was the TAN injection well, and that
17 was what we call an interim action cleanup that
18 was started about -- we signed the ROD on that
19 about two years ago, the Record of Decision, and
20 that one is in operation now.

21 The injection well is really closely
22 tied to the project we're talking about tonight,
23 the groundwater investigation, because the
24 injection well is the source for this
25 contamination. So we started cleaning up the

1 well knowing that there was an issue there, while
2 we were investigating the larger problem, and
3 we'll be talking more about that tonight.

4 There are also several other Operable
5 Units that have a number of different types of
6 issues, like underground storage tanks, spills,
7 disposal sites, several smaller areas, and we did
8 smaller investigations on those and we'll be
9 talking about several of those smaller
10 investigations as well.

11 The way we set up the agreement is
12 when we do all these investigations, look at all
13 the sites on their own, after all that is done,
14 then at the end we go back and take an overall
15 look to see if by looking at them individually we
16 missed something that we needed to consider in
17 the big picture, by looking at them together.
18 And so there will be a comprehensive
19 investigation that is more of a big-picture look
20 to see if we missed anything. And that's how the
21 -- that's called a comprehensive investigation,
22 and that will start in about a year for Test Area
23 North.

24 Okay. I know Chuck has seen this one,
25 because we presented this slide when we were up

1 here about a month or two ago when we were up
2 here.

3 When we talk about the investigations
4 that we do, basically what we're doing is going
5 out, looking at sites that we think there --
6 either we know there was contamination there or
7 we think there's contamination or suspect it.

8 And the whole process that we go
9 through is to look at that contamination and find
10 out what its extent is, what the contaminants
11 are, and then what risks they pose. And so
12 everything comes down to an evaluation of risk.

13 And risk is divided generally into two
14 parts. We talk about carcinogenic risks or
15 cancer causing risks, and then the
16 noncarcinogenic risks or other health effects
17 that contaminants might pose. For example, a
18 contaminant might cause damage to the
19 neurological system or to an organ, or birth
20 defects, that sort of thing.

21 And they're expressed in different
22 ways. Carcinogenic risks is expressed in terms
23 of risks of getting cancer, contracting cancer.
24 The Environmental Protection Agency set up what
25 was deemed an acceptable range. And that range

1 is shown here. It's between one in 10,000 and
2 one in 1,000,000 chances of contracting cancer.

3 And what that basically means is that
4 if someone were exposed to a situation at this
5 level, you would expect that one person exposed
6 to that contamination out of 10,000 would
7 contract cancer, in excess of the national
8 average.

9 So if we're within this range or below
10 it, according to the EPA guide, it's acceptable
11 range, it's okay, and doesn't need to be cleaned
12 up, probably.

13 In the case of the hazard index, it's
14 a little bit different. The hazard index for the
15 noncarcinogenic contaminants is expressed in
16 terms of, again, a hazard index. And a threshold
17 of one is set.

18 And what that means is, if you're
19 below -- if the calculations show you're below a
20 hazard index of one, there's a high degree of
21 certainty that even sensitive populations would
22 not be affected and would not have that health
23 effect. As we get above one, the degree of
24 certainty decreases. So as we get above one, we
25 have to look more carefully to see if a health

1 effect might occur.

2 That generally -- the reason I'm
3 introducing this is the presenters will come back
4 and explain the results of their risk assessments
5 and they'll use this chart when they get to
6 that. Okay.

7 Now, before I introduce our
8 presenters, there are a couple other
9 introductions I want to make.

10 First of all, if you don't know Chuck,
11 Chuck is right here, Chuck Broschious. He's a
12 member of what we call our Citizens Advisory
13 Board at INEL. It was established a few months
14 ago and they are looking at several things, one
15 of them being the Environmental Restoration
16 program. And Chuck is a member of that board.

17 Also, I'd like to introduce now, we
18 have -- like I said, our agreement is signed by
19 DOE, EPA and the State of Idaho. EPA is not with
20 us tonight, but we have representatives from the
21 State of Idaho Department of Health and Welfare,
22 and Margie English will give us a brief
23 introduction and say a few words.

24 MS. ENGLISH: Thank you, Nolan.

25 I'm the Waste Area Group manager for

1 the State working on the Test Area North project,
2 and I also have a few members of our State team
3 with me here tonight. I have Gary Winter, who is
4 a hydrogeologist, and he's helped evaluate
5 groundwater aspects with respect to this
6 project.

7 Dave Hovland is our technical
8 supervisor and he's helped us evaluate a number
9 of aspects on this project. And I think many of
10 you have seen him here at these meetings before.

11 And Jeff Fromm -- although he kind of
12 had a rough trip here, he just came in the door
13 -- he's our toxicologist and he's helped us
14 evaluate risks associated with the site.

15 So on behalf of all of us, I'd like to
16 welcome you to this meeting. We're very glad
17 that you're here and we all encourage the public
18 participation process.

19 Tonight you're going to hear about a
20 very complex groundwater problem and one that is
21 going to be difficult to solve. Over the past
22 couple of years, the State has worked with the
23 DOE and the EPA to evaluate the problem and to
24 formulate viable remedial alternatives. And it
25 has not been an easy process for a lot of

1 reasons, but we believe that the preferred
2 alternative that you'll hear about tonight is the
3 best approach to continue to address the
4 problem.

5 As Nolan alluded to, the reason we are
6 here tonight is to present the data to you and
7 the remedial alternatives and give you a chance
8 to ask questions, and then to find out your
9 opinions on the proposed remedial strategy.

10 Any comments that you make, either
11 verbal or written, will then be used by the three
12 agencies to help formalize our -- to help
13 determine our final remedial decision. And that
14 decision will eventually being formalized into a
15 Record of Decision.

16 So, again, I want to thank you for
17 coming and I want to encourage you to ask any
18 questions that you may have and offer any
19 comments that you may have, either on the
20 groundwater project or on the Track 1 sites that
21 you'll hear about later in the program.

22 Thank you.

23 MR. JENSEN: Thanks, Margie.

24 Like I said, EPA is not here tonight,
25 but they were at the other meetings and they did

1 have a brief statement that was read into the
2 record.

3 Okay. That sounds all pretty formal
4 so far, doesn't it? Hopefully we can be a lot
5 more casual now.

6 I'm going to introduce our
7 presenters. Before I do that, though, we do have
8 a couple of things that if you want just general
9 information about all the cleanup activities,
10 there is a Citizens' Guide at the back that you
11 can have. And this is the proposed plan. It
12 talks about the cleanup project that we're going
13 to be discussing tonight. So those are some of
14 the things that you can look at.

15 And, also, the back of the agenda has
16 an evaluation form. If there's anything we can
17 do to make this, our public meeting process,
18 better for you and more helpful, please go ahead
19 and comment.

20 One last thing. How many times have I
21 said that?

22 We're going to have about a 20 -- or
23 the meeting is going to be divided generally into
24 two parts. We'll have about a 20-minute
25 discussion by the people who did the project, and

1 then we'll have a question-and-answer period.
2 But, you know, there are so few of us, go ahead
3 and ask any questions you want during the
4 presentation, but just try to keep it sort of
5 short so we don't go on forever and don't get
6 through the presentation before we have a
7 question-and-answer period. But let's be real
8 informal, and go ahead and raise your hand
9 whenever you'd like.

10 And then after the presentation and
11 question-and-answer period, if you'd like to give
12 us a comment, we'll have a special section just
13 for that.

14 So I'll go ahead now introduce Dan
15 Harelson, and he was the DOE project manager on
16 this one.

17 Go ahead, Dan.

18 MR. HARELSON: As Nolan said, I'm Dan
19 Harelson. I'm the Department of Energy project
20 manager for cleanup activities at the Test Area
21 North.

22 As I'm sure most of you know, the
23 Idaho National Engineering Laboratory is a
24 Department of Energy facility. It's about 50
25 miles west of Idaho Falls. The whole site covers

1 890 square miles. Most of the facilities are
2 located here in the southern portion of the
3 site. One facility is located up in the north
4 area. It's the Test Area North. It's located
5 about 28 miles north of the other facility.

6 In general, the groundwater flow is
7 from northeast to southwest. It's the Snake
8 River Plain Aquifer, which is underneath the
9 site. At the Test Area North, there's a little
10 of a southeasterly component of groundwater flow,
11 but it hooks around to the southwest as you move
12 away from test area.

13 Test Area North was originally
14 established to support research and development
15 on nuclear-powered aircraft, that was done in the
16 1950s and was canceled in the early 1960s by
17 President Kennedy.

18 Following this nuclear aircraft
19 program, there were a couple programs devoted to
20 research and development on nuclear energy.
21 Those kind of wound down in mid 1980s.

22 There are four main facilities at Test
23 Area North. There's the Technical Support
24 Facility, which is, as the name suggests,
25 support. There are maintenance shops, vehicle

1 shops, offices. There's a guard gate and a fire
2 station.

3 The Initial Engine Test Facility is a
4 test stand that was used for these
5 nuclear-powered aircraft engines. It's no longer
6 in use and we have been gradually dismantling.

7 The Loss-of-Fluid Test Facility and
8 the Water Reactor Research Test Facility were
9 both established to support the research efforts
10 into nuclear energy.

11 Currently at the Loss-of-Fluid Test
12 Facility, the Army is manufacturing advanced
13 armor for the tank program.

14 Down here at the Water Reactor
15 Research Test Facility, there is a little bit of
16 research going on. One of the programs involves
17 development of a sensor for explosives at
18 airports.

19 The groundwater contamination problem
20 that we're dealing with was caused by an
21 injection well located at the Technical Support
22 Facility. This is a view of the Technical
23 Support Facility.

24 The injection well is located right
25 about here. It's a 12-inch-diameter pipe that

1 extends directly into the aquifer. It's
2 completed to a depth of about 300 feet. It was
3 used from roughly 1955 to 1972 to dispose of
4 pretty much all of the wastewater that was
5 generated at the Test Area North. That's
6 everything from process and industrial wastewater
7 to treated sanitary sewage effluent.

8 The industrial and processed
9 wastewater created a contaminant plume, the most
10 widespread contaminant is trichloroethylene.
11 It's also called trichloroethene, or TCE. It
12 extends in a plume that is about a mile and a
13 half long, by half a mile wide.

14 It was first discovered in 1987 during
15 routine sampling of the drinking water at the
16 Test Area North. An air sparging system was
17 installed to treat that drinking water to keep
18 the contaminant level below the federal drinking
19 water standards. An air sparger is much like an
20 air stone in an aquarium. It bubbles air through
21 the water and that strips out the contaminant.

22 In 1990, Department of Energy went in
23 and removed about 45 cubic feet of sludge from
24 the inside of that injection well. We followed
25 that in 1992 with a proposed plan for an interim

1 action. We also scoped the Remedial
2 Investigation/Feasibility Study that's the
3 subject of tonight's meeting.

4 The interim action involves extracting
5 contaminated groundwater directly from this
6 injection well, treating it to remove the
7 contaminants, and then discharging the treated
8 water to an existing disposal site.

9 We initially planned to operate that
10 system at about 50 gallons a minute
11 continuously. When we started pumping on that
12 well, we hadn't pumped it nearly as hard as we
13 have been on this injection well interim action,
14 and we've run into contaminant levels much higher
15 than we anticipated and also contaminants we had
16 not seen before.

17 We are currently operating it in a
18 batch mode, which means we will draw in 15,000
19 gallons of water, treat that to remove the
20 contamination, and discharge it. So far we've
21 removed over 3,000 pounds of organic contaminants
22 from the aquifer.

23 MR. BROSCIOUS: Could you elaborate a
24 little bit on contaminants you didn't expect or
25 various levels?

1 MR. HARELSON: We designed the
2 treatment system to handle ten to 15 parts per
3 million of trichloroethylene. We have been
4 running -- at times we have gotten 300 parts per
5 million trichloroethylene, which is essentially
6 30 times what we had anticipated. We have also
7 found dichloropropane, which is another organic
8 contaminant similar to trichloroethylene. We
9 have found that in levels as high as 1800 parts
10 per million.

11 AUDIENCE MEMBER: How much was the
12 TCE?

13 AUDIENCE MEMBER: Could you speak up,
14 please?

15 MR. HARELSON: We found that that --
16 oh, the question?

17 AUDIENCE MEMBER: The question.

18 MR. HARELSON: We found the
19 dichloropropane at -- I'm sorry, I lost my train
20 of thought. Would you repeat that question?

21 AUDIENCE MEMBER: What was the level
22 of TCE?

23 MR. HARELSON: We found peak levels of
24 about 312 parts per million.

25 And this is in the interim action, and

1 that's been discovered in the March-April time
2 frame, so...

3 Can I provide the other information on
4 this --

5 MR. BROSCIOUS: Those numbers are
6 actually pretty low by these other --

7 MR. HARELSON: Well, I think the
8 numbers in that document that you're looking at
9 are parts per billion, so this is a thousand
10 times. So to convert it to parts per billion, it
11 would be 312,000 parts per billion.

12 MR. BROSCIOUS: And that translates
13 into the organics -- were there any other
14 surprises in terms of fluctuations of
15 radionuclides?

16 MR. HARELSON: We encountered
17 strontium in one case that was markedly higher
18 than what we found previously.

19 We've also been running into a lot
20 more particulate matter, undissolved sand and
21 clay material that, while it's not a contaminant,
22 it's been a little bit problematic in terms of
23 the treatment and operations.

24 We feel we've modified the system
25 adequately to deal with it, the particulates.

1 And the strontium seems to be tied up with that
2 particulate matter. It seems to adsorb through
3 that, the particulate.

4 AUDIENCE MEMBER: What's the source of
5 the particulate matter?

6 MR. HARELSON: There seems to be two
7 types. There's some heavy stuff that seems to be
8 associated with what was disposed down there, and
9 then there is also some very fine particulate
10 matter that seems to be associated with the clay
11 interbeds that are found to be part of the
12 aquifer matrix. So it seems that it's material
13 that you would get if you put in a water well and
14 developed that water well, you would get back
15 sediment out of the water well, some of it from
16 the aquifer and some of it from it appears from
17 material disposed down there.

18 Greg Stormberg is here and he can
19 follow up on these questions.

20 AUDIENCE MEMBER: Once your water goes
21 through your treatment facility, what's the
22 concentration levels of the strontium when it
23 goes in the --

24 MR. HARELSON: The standard we're
25 working to that's specified in the Record of

1 Decision for the interim action is 300 picocuries
2 per liter.

3 AUDIENCE MEMBER: How does that
4 compare to the drinking water standard?

5 MR. HARELSON: It's significantly
6 above the drinking water standard.

7 AUDIENCE MEMBER: About how much?

8 MR. HARELSON: 292 picocuries per
9 liter.

10 AUDIENCE MEMBER: Is there any problem
11 with putting that high of a concentration back
12 into an unlined percolation pond where it can
13 obviously migrate back into the aquifer and
14 continue to cause problems, as opposed to putting
15 it into a lined evaporation pond, where at least
16 it wouldn't be going in -- potentially getting
17 into the aquifer again?

18 MR. HARELSON: When we wrote the
19 Record of Decision, the State was very concerned
20 about that potential problem. And we evaluated
21 that using a standard methodology that both the
22 State and EPA reviewed and accepted, and we
23 determined that it did not pose a problem to the
24 aquifer or to contaminating the soil and then
25 having people subsequently inhale or ingest the

1 soil.

2 So we evaluated that very carefully
3 and determined that it did not pose a problem.

4 AUDIENCE MEMBER: I'm sorry I can't
5 get off of this, but these percolation ponds have
6 been used since the site opened in the 50's and
7 have apparently been identified as sources of
8 contamination to the aquifer, as you know,
9 because they're a straight line.

10 It's only hoping that the soil column
11 is going to bind up some of that, some of those
12 contaminants, before it finally gets to the
13 aquifer. That's the hope.

14 But the reality is, as you look at the
15 water sample data from the aquifer, you're seeing
16 that there is those specific contaminants clear
17 down in the aquifer. So it's just hard to
18 imagine why the State and EPA would allow this
19 remedial action to proceed using those same old
20 stale waste management techniques.

21 MR. HARELSON: Well, one point I'd
22 like to clarify, then I'll let the State answer
23 it.

24 The water that we're discharging from
25 this interim action is going to a portion of a

1 pond that has not been contaminated. So there is
2 not existing contamination in the pond.

3 As I said, we very carefully evaluated
4 whether the strontium at the levels we are
5 discharging would impact either the aquifer or
6 the inhalation and ingestion pathways, and
7 determined that it did not pose a risk. The
8 State and EPA were both involved in that
9 evaluation and they concurred with the
10 evaluation.

11 Dave?

12 MR. HOVLAND: I might add that the
13 interim action is a -- is relatively short-term
14 disposal of that type. It's only to last what, a
15 couple of years, on the interim action?

16 MR. HARELSON: Well, at this time, the
17 interim action will also be a piece of the final
18 action and that's going to be two years, so a
19 total operation period of about two years and ten
20 months.

21 MR. HOVLAND: Yeah, but the final
22 method of treatment or whatever discharge with a
23 final solution has not been determined yet.

24 MR. HARELSON: That's right.

25 MR. HOVLAND: So this is an interim

1 action and we did do the modeling to ensure that
2 it was protective of the pathways you mentioned.
3 And I believe that perhaps some of the large
4 concentrations of strontium in the aquifer
5 probably were introduced through the pathway
6 directly through the injection well.

7 MR. HARELSON: I think almost
8 certainly Greg can address that better than I.

9 MR. HOVLAND: So I think there's a
10 couple different things going on related to how
11 the high concentrations of strontium got into the
12 Snake River Plain Aquifer.

13 AUDIENCE MEMBER: Well, just to give
14 you an example, these are numbers from test
15 reactor areas. The first one, strontium-90, in
16 that perched water was at 18,000 picocuries per
17 liter. And as you said, the standard EPA's
18 maximum concentration standard is eight. Now,
19 that was immediately under those the warm waste
20 -- the three percolation ponds at the Test
21 Reactor Area.

22 AUDIENCE MEMBER: And that was in
23 about like 50 feet; right?

24 AUDIENCE MEMBER: But clearly this
25 stuff left, I mean, was on its way down.

1 AUDIENCE MEMBER: Do you have the
2 information there about deeper perched water and
3 the Snake River Plain Aquifer, because there is
4 some direct information related to --

5 AUDIENCE MEMBER: I don't remember
6 that. It does drop off significantly. I can't
7 even remember any strontium-90 in the aquifer
8 there in the Snake River Plain. No, I don't
9 believe so. I think it really drastically
10 decreased by the time it got to that deeper
11 perched zone.

12 AUDIENCE MEMBER: Well, that would be
13 understandable, it would decrease with depth, but
14 the fact remains it's on its way to the aquifer.
15 The stuff moves.

16 AUDIENCE MEMBER: Another point to
17 bring out is the volume of water discharged at
18 the Test Reactor Area was millions of gallons a
19 day, where as what we're discharging from the
20 interim action is -- I don't --

21 Greg, do you have an idea?

22 MR. STORMBERG: Hundreds to thousands,
23 probably, at the most, and that's not every day,
24 either.

25 MR. HARELSON: Can we move to the

1 Remedial Investigation?

2 Greg Stormberg is one of the principal
3 investigators from the Remedial
4 Investigation/Feasibility Study, and he can
5 describe what we discovered from the Remedial
6 Investigation, outline the alternatives that were
7 considered for remediation.

8 After he's finished, I'll come back
9 and describe the alternatives that are presented
10 in the proposed plan and try to describe why we
11 prefer the alternative that we prefer.

12 Greg?

13 MR. STORMBERG: Chuck, before I step
14 into the Remedial Investigation, I just want to
15 kind of add to this pond question.

16 The pond in question here, the TSF
17 disposal pond, it took the discharged waste
18 discharge from 1972, after the injection well was
19 closed.

20 In 1989, in order to determine whether
21 or not that was a potential source of
22 contamination, we actually went into the pond
23 next to the standing water bodies and on the
24 outside of the pond, with shallow bore holes to
25 basalt, and did depth-profile sampling, and to be

1 honest with you, in general, found absolutely
2 nothing.

3 AUDIENCE MEMBER: How deep were those
4 samples taken?

5 MR. STORMBERG: Down to basalt, which
6 was roughly 40 feet.

7 AUDIENCE MEMBER: Okay.

8 MR. STORMBERG: Since that time, as
9 part of the Remedial Investigation, one, I think
10 three or four groundwater monitoring wells have
11 been put in, both down gradient and
12 cross-gradient from this pond down here in the
13 lower corner, go out here, and on the back side
14 of the pond. And both of those groundwater
15 monitoring wells were clean of any
16 contamination.

17 AUDIENCE MEMBER: Okay.

18 MR. STORMBERG: One last point that's
19 different from the TRA area is that we don't have
20 any interbeds between the top of basalt at 40
21 feet and the aquifer, so we don't have any
22 perching layers there. What water we do have is
23 perched right on top of the basalt in the
24 sediments, the surficial sediments on this side.
25 Like I said, to my recollection. And maybe

1 that's just food for thought here.

2 AUDIENCE MEMBER: It might be well
3 useful to include that data in the Administrative
4 Record.

5 MR. STORMBERG: It is.

6 AUDIENCE MEMBER: It is there?

7 MR. STORMBERG: Yeah.

8 AUDIENCE MEMBER: Also data on the
9 other two injection wells?

10 MR. STORMBERG: Yes.

11 What I'm going to do this evening is
12 talk about two things, the results of the
13 Remedial Investigation that was carried out in
14 1992, and then give you an introduction to the
15 types of technologies that were looked at to
16 remediate the groundwater problem and how those
17 technologies are then screened to get us down to
18 a small handful that we can do a very detailed
19 analysis on and select a preferred alternative
20 from, and talk about the specifics of the
21 preferred alternative.

22 With respect to the Remedial
23 Investigation, which is the characterization
24 portion of this study, that's where we want to
25 characterize what the system is like. We want to

1 take a look at the nature and extent of the
2 contamination, what kind of contamination we're
3 dealing with, and how widespread are they.

4 Okay. And then after we have an idea
5 of that, then we go ahead and take a look at the
6 risk posed to human health and the environment by
7 those contaminants.

8 In order to determine or identify and
9 define that nature and extent of contamination,
10 we drilled a number of groundwater monitoring
11 wells and we collected several rounds of
12 groundwater samples.

13 We had them analyzed for a variety of
14 constituents, both organic and radionuclides in
15 general.

16 That information, in conjunction with
17 data that we collected during 1989 and 1990,
18 allowed us to identify seven basic contaminants
19 that, at this point, we're concerned about.
20 Those include the volatile organics, TCE,
21 dichloroethene, tetrachloroethene. These are
22 chlorinated volatile organics.

23 Then we have some radionuclides, and
24 these included strontium-90, cesium-137, tritium,
25 and uranium-234. Dan already mentioned that

1 since the interim action has become operational
2 we have identified dichloropropane in the water
3 from the injection well itself. We have also
4 identified americium-241 in a couple of samples,
5 but it isn't a regular occurrence, at least not
6 at this time.

7 Basically what we're dealing with is a
8 very dynamic system. We may not have all the
9 answers with respect to the specific
10 contaminants, but I think we have a fairly good
11 idea on the general class of contaminants,
12 whether volatile organics or radionuclides.

13 AUDIENCE MEMBER: How about
14 plutonium-238, 239, 240, cobalt?

15 MR. STORMBERG: Haven't detected
16 them.

17 AUDIENCE MEMBER: Any heavy metals?

18 MR. STORMBERG: We have sporadic, and
19 we've determined -- we've basically decided
20 they're outlier hits of lead. If you really take
21 a look at the metals data, the lead is in places
22 that there is absolutely no way it could be, and
23 at levels that are really variable, even between
24 duplicate samples.

25 We feel like those outliers are more

1 of an analytical glitch than a reality. But
2 that's the only heavy metal that I can remember.

3 AUDIENCE MEMBER: Which ones did you
4 test for?

5 MR. STORMBERG: The list is about 20
6 or 30 long.

7 AUDIENCE MEMBER: (Indiscernible)?

8 MR. STORMBERG: Very possibly, yes.
9 What we found as a result of the
10 drilling and sampling program is that -- well,
11 what we're going to look at is both the
12 horizontal extent of contamination and the
13 vertical extent. Okay?

14 As Dan mentioned, the horizontal
15 extent or lateral extent of contamination can be
16 defined by the TCE groundwater plume. It's the
17 most widespread of any of the contaminants, about
18 a mile and a half long, goes down the groundwater
19 gradient, about a half mile wide.

20 All of the other contaminants, their
21 plumes would fit well within the TCE plume, in
22 fact, only extend about a half a mile at the
23 outside away from the injection well. So we use
24 TCE as our base line plume.

25 With respect to the vertical extent of

1 contamination, I need to back up and just give
2 you a brief description of the subsurface
3 environment.

4 We're dealing with basalt flows, and
5 in between some of those basalt flows we have
6 sediments. We call them sedimentary interbeds.
7 So we're interested in the vertical extent of
8 contamination, how deep it's gone, and what are
9 the properties of these sedimentary interbeds.
10 Okay.

11 The Snake River Plain Aquifer at TAN
12 starts about 200 feet and it extends -- or the
13 affected part of it extends down to about eight
14 or 900 feet. Okay. So we're dealing with an
15 effective aquifer that may be seven or 800 feet
16 thick, six to 800 feet thick.

17 Well, what we found from the drilling
18 and sampling is that this interbed here -- we
19 call this the QR interbed -- is continuous, and
20 it's about 15 to 40 feet thick; it has a range.

21 It's composed of silts and clays. And
22 the groundwater analyses above and below this
23 interbed indicates that the contamination
24 exceeding drinking water standards is confined
25 above this interbed, this continuous interbed is

1 acting basically as a barrier to the downward
2 migration of contaminants, that we found no
3 groundwater below this interbed that was
4 contaminated with any of contaminants of concern
5 above the drinking water standard. Okay. That's
6 important --

7 AUDIENCE MEMBER: How many wells do
8 you have below that interbed?

9 MR. STORMBERG: We have three or four
10 that go below.

11 AUDIENCE MEMBER: And how many times
12 has this been sampled?

13 MR. STORMBERG: Three times. We also
14 sampled it during the actual drilling program.
15 We took depth-specific profiles as we moved on
16 down.

17 What's important about this interbed
18 is that, since we have an effective aquifer depth
19 of about six to 800 feet thick and yet our
20 contamination is confined to the upper, let's
21 say, 200 to 250 feet, we're dealing with a much
22 smaller volume of water that we potentially have
23 to treat. Okay. So we use that with respect to
24 remediation technologies that we do evaluate.

25 One last point I'd like to make with

1 respect to the nature and extent of contamination
2 is with the injection well itself.

3 Based on the sludge that we removed in
4 1990, the Remedial Investigation data, and the
5 interim action information that's starting to
6 come back, it's fairly apparent that the highest
7 concentrations of contamination are still within
8 the immediate vicinity of this well. The
9 concentrations decrease rapidly as we move away
10 from this well. Within 100 feet, we're dropping
11 by a factor of 10-to-100 in some cases.

12 Okay. So what this tell us is that we
13 probably have residual undissolved contamination
14 in the injection well, in the annular space
15 outside of that injection well, and that's
16 important with respect to remediation as well.

17 AUDIENCE MEMBER: Excuse me a second.

18 MR. STORMBERG: Yes.

19 AUDIENCE MEMBER: So the injection
20 well goes into that interbed?

21 MR. STORMBERG: No, sir.

22 AUDIENCE MEMBER: It's not as it's
23 drawn there?

24 MR. STORMBERG: Yeah, it -- they drew
25 it a little bit deep. It actually goes to about

1 right here.

2 AUDIENCE MEMBER: Okay.

3 MR. STORMBERG: This portion should
4 not be here. Good observation.

5 Okay. Once we've defined the types of
6 contamination that we were looking at or looking
7 for and how widespread they are, what we wanted
8 to do is take a look at the risks posed by those
9 contaminants. Okay. And basically we looked at
10 three scenarios, three different scenarios.

11 We took a look at what we call a
12 current industrial use scenario, where we
13 evaluated workers and visitors who are out there
14 at the present time and they're using the water
15 from the production wells that are operational,
16 and they're located right about here, at the
17 northern edge of the plume.

18 We also took a look at two future use
19 scenarios. We looked at future residents using
20 water from anywhere within the general
21 groundwater plume, and we also took a look at
22 future residents using water strictly from the
23 injection well itself.

24 Now, for all three of these scenarios,
25 we evaluated various pathways, exposure

1 pathways. That's how those contaminants are
2 taken up into the body. We looked at the
3 inhalation of volatiles, for example while
4 showering. We also looked at the ingestion of
5 the water, or the drinking of that water.

6 For the future resident, we took a
7 look at one additional exposure pathway, and that
8 was the ingestion of food crops irrigated with
9 the contaminated water. Okay.

10 What we found with respect to risks is
11 that under the current scenario for workers and
12 visitors, we had a total cancer risk that equated
13 to one additional incident of cancer per
14 1,000,000 individuals, okay, which is below the
15 acceptable range. So we know that we don't have
16 a risk there for cancer-causing constituents. We
17 saw a hazard index of .003, which is well below
18 the threshold of one. Okay.

19 For the future residential use, where
20 we were pulling water or using water from
21 anywhere within the general groundwater plume,
22 there was a total cancer risk that equated to
23 three additional incidents of cancer per 100,000
24 individuals.

25 Right across there you'll see that

1 we're still within the acceptable range defined
2 by the EPA.

3 And with respect to the hazard index,
4 we calculated a hazard index of about .8, so
5 we're just below the threshold. This indicates
6 that it's unlikely that even sensitive
7 populations, such as children or older
8 individuals, are going to be affected by the
9 contaminants.

10 On the other hand, the use of the
11 water from the injection well itself, what we
12 found with respect to total cancer risk is two
13 additional incidents of cancer per 1,000
14 individuals.

15 Okay. So you can see we're above the
16 acceptable range as levels established by the
17 EPA. In fact, it's fairly high.

18 We also found a hazard index of 23.
19 That indicates that some of these sensitive
20 populations definitely may be adversely affected
21 by the use of the water that's contaminated from
22 the injection well.

23 Okay. Well, with that in mind,
24 knowing that we have a risk, we went ahead and
25 proceeded into a Feasibility Study. That's the

1 second portion of the Remedial
2 Investigation/Feasibility Study. That's where we
3 take a look at identifying remediation
4 technologies that may be viable for the problem
5 at the site; that's groundwater we're dealing
6 with.

7 There are three basic stages to a
8 Feasibility Study. First, you want to identify
9 as many technologies as may be viable. Then you
10 want to screen them, the general categories.

11 In each of these categories except the
12 No Action one, you see here there are several
13 technologies to quite a few, depending on the
14 general action.

15 For example, institutional controls,
16 we might include an alternative water supply, or
17 fencing, or deed restrictions; something like
18 that.

19 Containment technologies, we might
20 approve of grout curtains, where they inject
21 cement all the way down and they basically
22 provide or put in place a physical barrier.

23 There's also hydraulic type
24 containment, where they circulate the
25 contaminated groundwater to prevent further

1 migration.

2 And I'm just trying to give you some
3 examples in these different categories.

4 Under the collection and removal of
5 contaminants, probably the most widely used
6 technology is extraction wells. Pull the
7 contaminated groundwater out of the aquifer, it's
8 then treated, and you can then reinject it. Or
9 as in the case of the interim action, we are
10 putting it in the disposal pond. Okay.

11 Aboveground treatment actions, these
12 are really the treatment options or process
13 options that we use to take the contaminated
14 contaminants out of the media in question. It
15 includes things like air stripping, carbon
16 adsorption, ion exchange, things like that.
17 Okay.

18 And then treatment-in-place
19 technologies are typically bioremediation type
20 technologies.

21 Okay. Once we identify the list, the
22 full range of possible technologies -- and I
23 don't have the exact number, but I think the list
24 was about 30 or 40 technologies long, so quite a
25 few -- what we wanted to do was screen them to

1 get them down to a handful that we could manage.

2 And we do this using criteria
3 established by the EPA. Some of these criteria
4 include: Protection of human health and the
5 environment. Does it comply with federal and
6 state laws? Is it effective in the short term
7 and in the long term? How easy is that
8 technology to implement? What does it cost?
9 Things of that nature. And we also have public
10 and State acceptance, and that's why we're here
11 tonight.

12 Okay. Well, what we did is we applied
13 the screening criteria to the range of
14 technologies and we came up with four basic
15 remedial alternatives that we felt were viable
16 for the Test Area North groundwater problem.
17 From that we selected a preferred alternative.

18 And Dan will give you the specifics on
19 the four alternatives now.

20 MR. HARELSON: The proposed plan
21 presents four alternatives for dealing with the
22 groundwater contamination at the Test Area
23 North.

24 The first alternative presented is No
25 Action. And just as the name implies, nothing

1 would be done to either remove or contain the
2 contamination. We would monitor changes in the
3 groundwater plume over time.

4 On limited action, which is the second
5 -- well, back to no action, this is an
6 alternative that must be included in the
7 evaluation under the Superfund Law. It gives a
8 base line which everything else can be compared
9 to.

10 On the Limited Action, this would be
11 preventing people from gaining access to the
12 contaminated water. This could either be done
13 through physical means by putting up fences, or
14 putting signs saying "don't drink the water. "

15 It could be done with administrative
16 means, such as deed restrictions that say if you
17 buy this land you can't install a well.

18 It could also be accomplished by
19 installing another water supply well, well away
20 from contamination.

21 AUDIENCE MEMBER: While you're
22 changing the thing, you remember back to Love
23 Canal. The generator of the hazardous material
24 that was discharged there put a deed restriction
25 on the title when they transferred the deed. The

1 City took it off, built a school on there.

2 That's how effective deed restrictions are.

3 Live and learn from history.

4 MR. HARELSON: That's not our
5 preferred alternative, fortunately.

6 Alternative 3 and Alternative 4 are
7 very similar.

8 Alternative 3, which is our preferred
9 alternative, includes three main pieces. The
10 first piece is continuation of this interim
11 action that I've spoken about.

12 The second piece is an enhanced
13 remediation system that focuses again right there
14 on the injection well. We believe that there is
15 still some source material that's undissolved in
16 the immediate vicinity of the injection well.

17 And then there is extraction and
18 treatment of a portion of the dissolved
19 contaminant. The continuation of the interim
20 action would be intended to continue removing
21 contaminants while we are designing and
22 constructing this enhanced remediation system.
23 It would also provide some measure of hydraulic
24 containment. It would slow the spread of
25 contaminants from the injection well.

1 This enhanced removal uses an
2 innovative approach, where we would either inject
3 surfactants or steam to enhance the removal of
4 contaminants.

5 That injected steam or surfactant
6 would be recovered and treated. The treated
7 water would be reinjected to the aquifer at
8 federal drinking water standards or below federal
9 drinking water standards.

10 The third piece involves extraction
11 and treatment of a small portion of this
12 groundwater plume. The remainder of the plume
13 would be investigated, further investigated, and
14 the remedial alternative for this wider area of
15 contamination would be addressed in the WAG-wide
16 and the INEL-wide RI/FS. Again, we would
17 continue monitoring changes in the plume and we
18 would continue preventing people from gaining
19 access.

20 Fourth alternative is very similar to
21 Alternative 3. In fact, it's identical to
22 Alternative 3, except we would address a much
23 larger portion of the plume.

24 In theory, if we address this much
25 larger portion of the plume, the entire area of

1 contamination would be returned to federal
2 drinking water standards by the year 2040. 2040
3 was selected based on it being a reasonable
4 estimate of when that part of the site would be
5 available for non-DOE uses.

6 Alternative 3 is our preferred
7 alternative, because it focuses on the source.
8 In order to clean up this wider area of
9 contamination, it's necessary first to address
10 the source. We believe that by deferring the
11 cleanup of this wider area of contamination,
12 we'll be building flexibility into the process.
13 That flexibility will allow us to adapt our
14 approach. As we learn more about the problems
15 from this cleanup effort, we will be able to
16 adapt our approach and ideally reduce our costs
17 while still cleaning up the problem.

18 So with that, I'll turn it back to
19 Nolan.

20 MR. JENSEN: Go ahead. We'll just
21 have some question-and-answer now.

22 AUDIENCE MEMBER: When you're talking
23 about the cleanup to a 5,000 parts per billion,
24 that's normally the units you use for organics;
25 right? Now, how does that -- I mean, where do

1 the radionuclides, the cesium, the strontium,
2 tritium and those, come in? Where do they fit
3 into that determination? At what point, you know
4 --

5 MR. HARELSON: We're using --
6 trichloroethylene is the most widespread
7 contaminant, and we are using it -- if you
8 address the trichloroethylene, you will address
9 the remainder of it. What we were talking about
10 doing on this preferred alternative is returning
11 this portion that's above 5,000, cleaning that up
12 to the drinking water standard.

13 We sometimes get loose with our
14 terminology and limit this to TCE, but it would
15 also address those other contaminants that you
16 identified.

17 AUDIENCE MEMBER: And clean them up to
18 drinking water standard, whichever it is for that
19 particular contaminant?

20 MR. HARELSON: Right.

21 MR. JENSEN: Any other questions?

22 And Dan and Greg will be here, you
23 know, you can talk to them one-on-one later, but
24 any other questions?

25 Okay. Why don't we go ahead and go

1 right into the commentary, if you're ready.

2 What we do now is, we're opening this
3 up for a formal comment portion of the meeting.
4 And this is your time to give a comment, so we
5 don't respond to that. We don't -- you know,
6 it's not really a question-answer period unless
7 we need to clarify to make sure we understand the
8 comment, so -- and the comments will be addressed
9 in a written response in the summary of the
10 Record of Decision, so --

11 Yes, Reuel?

12 MR. SMITH: I was going to ask that we
13 might just check and see if individuals need a
14 few minutes to put those together before we
15 actually go into it, because we really haven't
16 had much of a question-answer session, so they
17 might need a minute to prepare thoughts.

18 MR. JENSEN: Okay. Is that true? Do
19 you need a minute, Chuck?

20 AUDIENCE MEMBER: I had another
21 question, actually. There is -- the reason I
22 asked about the plutonium and the cobalt was they
23 had some pretty high concentrations in the sludge
24 during the first remediation. The Pu-239 was at
25 12.2 picocuries per liter, 241 was 123.6, the

1 tritium was at a million, americium-241 was at
2 23.6, (indiscernible) at 6.6, cesium-137 at
3 2,540, cobalt-60 at 812, which are pretty high
4 readings.

5 The reason for asking that is that it
6 appears that that was a complete cleanup, at
7 least for those isotopes, and I'm surprised that
8 you wouldn't find some residual amounts there, as
9 you said?

10 MR. STORMBERG: We haven't seen any of
11 those constituents in any of the groundwater
12 samples since that sludge was analyzed. I guess
13 the best I can say is that a lot of it depends on
14 how much sludge remains outside of that well.
15 And we don't know that.

16 MR. HARELSON: I need to -- we have
17 also been monitoring for those on the interim
18 action. We have had one hit of americium at
19 about .13 picocuries per liter. That was -- I
20 don't have the numbers with me. Pu-234, 238, 235
21 were also found. I don't recall the numbers. I
22 can get those numbers for you, if you'd like.

23 MR. STORMBERG: Actually, I think I
24 just saw them here someplace.

25 Seven picocuries per liter is the

1 highest I saw for 234 in one of the samples. But
2 a lot of it depends on how much is down there in
3 the sludge.

4 AUDIENCE MEMBER: Well, that's above
5 the drinking water standard, and it would seem
6 that you'd have an obligation at least to
7 acknowledge that.

8 MR. STORMBERG: For which
9 constituent?

10 AUDIENCE MEMBER: Americium- --

11 MR. STORMBERG: 241?

12 AUDIENCE MEMBER: Uranium-234.

13 MR. HARELSON: 234 is identified as a
14 contaminant.

15 AUDIENCE MEMBER: Okay. Okay.

16 MR. JENSEN: Anything else before the
17 comment period?

18 I guess there are only three of you
19 here left that are public, or that aren't
20 affiliated with the project. Were you all going
21 to give a comment? Any of you? Are you going to
22 give a comment, Chuck?

23 Okay. Let's go ahead and open the
24 comment period now, and if you'd just state your
25 name at the beginning of that, we'll give you as

1 much time as you'd like. So go ahead and give
2 your comment.

3 Do you want to go ahead, Chuck?

4 And, sir, were you going to comment?

5 AUDIENCE MEMBER: I'm still thinking
6 about it.

7 MR. JENSEN: Okay. We'll get back to
8 you.

9 MR. BROSCIOUS: My name is Chuck
10 Broschious, B-r-o-s-c-i-o-u-s. I'm executive
11 director of Environmental Protection Institute.

12 It's real encouraging to see
13 improvements in the public literature that's
14 coming out, to see, you know, data that is -- not
15 only states the maximum observed concentrations,
16 but besides that, the drinking water standard.
17 And, you know, that is a significant change from
18 the way things were done in the past. And it's
19 very helpful to have the information presented in
20 that way. I think it's a lot more candid and I
21 would put it as a significant improvement.

22 The one reservation that I have about
23 the way the treated water is being discharged is
24 that if, in fact, it has the concentrations of
25 cesium -- or strontium-90 at 30 picocuries per

1 liter, which is -- I'm sorry, 300 picocuries per
2 liter, which is almost 300 times the drinking
3 water standard, being discharged into something
4 that is universally recognized as a failed
5 inadequate waste management approach, being the
6 percolation pond, is just really distressing to
7 see that that kind of continued practice is going
8 on.

9 I would much rather see, as we've
10 recommended in our written comments, that if
11 indeed the treatment technology is not able to
12 extract enough of the strontium to get it down to
13 drinking water standards, then at least it should
14 go into a lined evaporation pond.

15 That's the extent of my comments right
16 now. Thank you.

17 MR. JENSEN: Have you made up your
18 mind yet, sir? Would you like to comment?

19 AUDIENCE MEMBER: I'll make a
20 comment.

21 MR. JENSEN: Would you just give us
22 your name, please.

23 MR. DECHERT: Yeah. My name is Tom
24 Dechert from here in Moscow.

25 I guess what concerns me -- I'm like

1 Chuck, I appreciate the more open nature in the
2 way that the information is being provided these
3 days and the more complete nature of the data
4 that's being provided.

5 And similar to Chuck, I'm concerned
6 about evaporation ponds, and not only for
7 percolation reasons, but also for aerial
8 dispersement problems that may occur if there are
9 evaporation ponds. I'm not sure that those are
10 addressed adequately anyplace or that the data is
11 available, knowledge is available, to know
12 exactly what's going to happen with that stuff in
13 terms of aerial dispersement.

14 But in terms of the characterization
15 of the site and the extent of contamination of
16 this site, I have some concerns about that as
17 well, and they relate to comments I've made at
18 previous meetings here, in terms of the fact that
19 just looking at your sampling scheme, for
20 instance, for this water plume, I have a hard
21 time seeing how you can have a high level or
22 degree of confidence that you have adequately
23 described the degree of contamination there.

24 And I think by virtue of the fact that
25 you're getting stuff back out of the injection

1 well that you haven't seen before, you're seeing
2 things that are surprising you as you go along,
3 is an indication that there is some lack of
4 understanding, I think, of degree of
5 contamination in the aquifer, and not only that,
6 but how the aquifer works at that site, or
7 anyplace else, as far as that goes, under the
8 INEL.

9 I'm not fully convinced that -- what
10 should I say -- well, first off, having to do
11 with the interbeds, that the characterization of
12 those interbeds as you have described them and
13 they were also described to me outside of this
14 meeting can fully explain -- if we're talking
15 about basalt -- what's going on with the
16 containment of the contaminants that are down
17 there.

18 In other words, I would have -- I just
19 have a feeling that there's more to the
20 interbeds, the silts and the clays, that are
21 occurring in the aquifer, than you have a good
22 handle on.

23 And it disturbs me, I guess, that the
24 models you use when you're looking at those or
25 when you are describing those, what's going to

1 happen with these plumes of these -- the movement
2 of contaminants in the future are based on
3 assumptions of the clays, the silts and the
4 basalts in the aquifers that I don't think are
5 very well documented or very well substantiated
6 in your data base.

7 MR. JENSEN: Is that it?

8 Okay. By the way, you can still --
9 like I said, the comment period goes till
10 June 17, and on the back of the proposed plan
11 there is a postage-paid comment page here that
12 can be submitted through June 17, so if you'd
13 like to, submit additional comments. And also
14 within the proposed plan there are locations
15 where the Administrative Record is located and as
16 well as phone numbers for each of the agencies,
17 if you'd like to get more information.

18 So with that we'll go ahead and close
19 our comment period. Like I said, the other part
20 of our meeting is going to last -- I think your
21 presentation lasts about 15 minutes, T. J.,
22 something like that, maybe even less. So we'll
23 take a few minutes break here while he sets up,
24 then we'll do the second part.

25 (Recess.)

1 MR. JENSEN: The second part of the
2 meeting tonight is, as we mentioned earlier,
3 dealing with several preliminary investigations
4 we did. Back when we signed the Federal Facility
5 Agreement three years ago, three and a half years
6 ago now, we knew there were some issues at the
7 site, like the TAN groundwater we talked about
8 earlier for example. We knew that those were
9 issues we had to deal with. We knew there was
10 contamination there and there were significant
11 problems that needed significant investigation
12 and evaluation.

13 But all together there were 400 sites
14 that were identified at that time, over 400. And
15 several of those were much smaller. They were
16 someone knew that there was an oil spill, or
17 someone thought that there was an acid spill.
18 There were several underground storage tanks.

19 And so what we did is, rather than
20 throw all those into a large, extensive
21 investigation, we wanted to do a screening level,
22 look at those first to see if they warranted
23 further investigation or whether there was just
24 not much of an issue there.

25 So what we set up was a couple

1 preliminary investigation processes that we
2 called Track 1 and Track 2.

3 And essentially a Track 1 was to go
4 out and look at existing data, see if we could
5 use any existing file information to evaluate the
6 site and come up with some sort of a
7 determination there.

8 Track 2 is very similar, only it's a
9 little more extensive. We actually go out and
10 take some samples, do a little bit more intensive
11 data selection effort there.

12 But in both cases, generally what we
13 do is we end up, based on that evaluation,
14 deciding that there really is no issue there, or
15 that it's small and there is no significant
16 threat, or that it's something we can clean up
17 rather quickly, so we do a -- what we call a
18 removal action and clean it up. Or that we find
19 out that there is a significant issue there, at
20 least significant enough that we need to evaluate
21 it further and investigate it further. And so in
22 that case, we would probably roll that site into
23 one of our larger investigations.

24 But what we're taking about tonight is
25 several of the Track 1 investigations that, after

1 going through the evaluation, we made the initial
2 determination that there really wasn't a big
3 enough issue there to address it further.

4 And so this is the second proposed
5 plan that we've done that with that we're now
6 going back to some of these determinations that
7 we have made preliminarily and now we're bringing
8 those out to the public and saying, this is what
9 we found on some of those smaller sites. And
10 we'll probably be doing that more each time as we
11 complete these investigations.

12 So I'll now introduce T. J. Meyer from
13 EG&G who will talk about these Track 1s for a few
14 minutes.

15 MR. MEYER: Thank you, Nolan.

16 There are 40 Track 1 sites at Test
17 Area North. Today we're going to be talk about
18 31.

19 The other nine sites we're not talking
20 about tonight have been completed, and what we've
21 been able to determine is that there is something
22 there, an additional problem that needs further
23 investigation, further resolution; so they'll be
24 presented at a later proposed plan and then a
25 ROD.

1 31 sites we have completed and
2 prepared to present to the public tonight can be
3 categorized into 18 former, or currently
4 inactive, underground storage tanks; ten
5 potentially contaminated soil sites --

6 And I say the word "potentially,"
7 because the initial information that we had five
8 and eight years ago when these sites were
9 identified and put on some list was that there
10 was a potential for some contamination out there,
11 the site had some debris on it, there was some
12 historical indication that there was something
13 out there. The Track 1 investigation's purpose
14 was to go out there and characterize what was out
15 there.

16 -- and then there were three
17 wastewater disposal sites.

18 Each of these Track 1 investigations
19 had a large -- or had a 30- to 50-page report
20 prepared where we went out and collected all the
21 historical information, the process knowledge of
22 what happened at past times, 30, 40 years ago, at
23 each of the sites. We tried to collect
24 photographs at each of the sites to identify what
25 the condition of the site was during its use. We

1 talked to employees who were out using the sites
2 or were familiar with the operation at the
3 sites. Then we conducted site visits, and in
4 many cases conducted sampling to find the current
5 site conditions in the soils and around the sites
6 themselves.

7 Then we took that information and put
8 it together in a risk evaluation and then
9 presented it to the agencies to make the
10 recommendations.

11 An example of what these Track 1
12 reports look like is presented here, and it's a
13 standardized format that was identified in the
14 Federal Facility Agreement, and the guidance
15 manual was prepared, and all of the Track 1s have
16 met the approach of the guidance manual.

17 There's about 10 or 15 pages of
18 historical information, probably 10 or 15 pages
19 of site-specific analytical data, and about 10
20 pages of risk assessment information.

21 I have two binders back here with all
22 31 of the Track 1 investigations, if someone is
23 interested in them. And they are also as part of
24 the Administrative Record.

25 The sites occur across the TAN

1 complex. Earlier we heard a description of each
2 of the complexes: The Loss-of-Fluid Test
3 Facility; the Initial Engine Test, which is
4 located north; and then the Technical Support
5 Facility, which is the main center facility; and
6 then the Water Reactor Research Test Facility is
7 southeast.

8 All of the sites have some of the
9 Track 1 sites present. All of them have
10 underground storage tank sites which we are
11 discussing tonight. They're shown in the purple
12 or violet color in each of the photographs.

13 Only the Loss-of-Fluid Test Facility
14 and the Technical Support Facility have
15 contaminated or potentially contaminated soil
16 sites shown in the green.

17 The three wastewater sites all occur
18 at the Water Reactor Research Test Facility, and
19 they're shown here in blue. And the types of
20 water that were discharged here were processed
21 water and sanitary water. Mainly, the reactor
22 use of these facilities is very low-power,
23 bench-scale small reactors.

24 The results of the 31 Track 1
25 investigations showed that 23 sites had no

1 contamination present at all. In the historical
2 information, there was no indication that there
3 was any contamination present, or the sampling
4 information showed that there was no
5 contamination present.

6 Nine of sites, a problem was
7 identified and they need to be investigated
8 further. More thorough sampling investigation
9 has to be done at each of those sites.

10 Eight of the sites, contamination was
11 found. And they're shown here in the table.
12 Each of the major facilities shown on the board
13 had one of these sites where contaminants were
14 found. The type of site is shown here in the
15 second column.

16 Basically, the types of sites and the
17 types of contaminants can be broken down into two
18 types, mainly, sites related to use of
19 underground storage tanks, mainly petroleum,
20 hydrocarbon, contaminants from fuel oils, waste
21 oils, or from motor oils. And then one
22 contaminated site had radionuclide detected at
23 it.

24 AUDIENCE MEMBER: Which site is that?

25 MR. MEYER: It's TSF 36.

1 AUDIENCE MEMBER: Could you point that
2 out on the drawing so we can see where that one
3 is?

4 MR. MEYER: That one is located right
5 here. That's TSF.

6 AUDIENCE MEMBER: My understanding is
7 that they had at that particular area some five
8 or six radioactive waste holding tanks. Have
9 they been put into this list? Have they yet to
10 be evaluated? Some of those had serious leaks in
11 the past.

12 MR. MEYER: Those were identified as
13 Track 2 sites, where it was clear there was
14 something there, but we didn't know fully what
15 was the problem. And Track 2 site allows us to
16 do a more complete investigation. These all take
17 between six and nine months to actually do the
18 paperwork and get all the information together,
19 whereas the Track 2s take up to 18 months to
20 collect data.

21 So yes, there's 24 Track 2 sites, and,
22 in fact, all of the sites that you're talking
23 about were looked at last year and we're
24 completing some of the reports now on that
25 information.

1 AUDIENCE MEMBER: Okay.

2 MR. MEYER: But essentially -- I don't
3 know how familiar you are with the TSF facility,
4 but there is a large, natural earthen hill, it's
5 like an embankment, and they enlarged it and it
6 acts like a dike for shielding. And everything
7 to the west of this is radioactive, and
8 everything to the east is essentially
9 nonradioactive, or nonradioactive activities went
10 on.

11 In this one case here, there was
12 cesium found in a surface water drain.

13 MR. JENSEN: Show where the V tanks
14 are.

15 MR. MEYER: The V tanks are located
16 here around the hot zones, and all of these were
17 --

18 AUDIENCE MEMBER: You call them V
19 tanks?

20 MR. MEYER: I don't know why. But
21 it's part of an evaporator process, and so the V
22 stands for evaporation.

23 MR. HARELSON: The V tanks are in -- I
24 think they're Operable Unit 1-05.

25 MR. MEYER: Is there anything else you

1 want to talk about, any of these other sites or
2 locations?

3 AUDIENCE MEMBER: No.

4 MR. MEYER: I'll just put this one out
5 front.

6 The risk assessment done on the eight
7 sites where contaminants were found looked at
8 both carcinogenic and noncarcinogenic type
9 contaminants.

10 The two carcinogenics that we were --
11 that we detected on our sampling was benzene at
12 one of the petroleum underground storage tank
13 sites, and cesium-137.

14 And the risk assessment that looked at
15 the contaminant that was actually detected at
16 those sites, the risk assessment showed that the
17 risk level was below, the acceptable risk range,
18 which means that there is an acceptable risk at
19 these sites. The contaminants were way below the
20 10-to-the-minus-6 risk level.

21 For the noncarcinogenic contaminants,
22 the toluene, ethyl benzene and xylene, the risk
23 assessment showed again that the contaminants
24 were below the hazard index of one, which means
25 that sensitive populations are not likely to be

1 adversely affected by these contaminants.

2 On page 14 of the proposed plan,
3 there's a table and it shows potential risk
4 levels that you would need. In the first two
5 columns are the carcinogenic compounds, that's
6 cesium-137 and benzene, and it shows for each of
7 those sites how much of the contaminant would
8 have to be there to pose a risk of 10 to the
9 minus 6 right here.

10 And if you flip to page 20, TSF 36 is
11 shown there, and we had 6.5 picocuries of cesium
12 detected at that site. And at the second
13 paragraph, the bottom part of that second
14 paragraph, it shows results were 6.5 picocuries
15 per gram of cesium-137.

16 If you go back to Table 3 on page 14,
17 you can see that the various pathways of the soil
18 ingestion is probably the most sensitive in this
19 case, and you'd need greater than 200 -- you'd
20 need 280 picocuries per gram. It says "parts per
21 million," but it's a typo. You need 280
22 picocuries per gram. So you can see we're an
23 order of magnitude below what you'd actually need
24 to pose a risk.

25 AUDIENCE MEMBER: Say that again.

1 What's a typo?

2 MR. MEYER: Underneath "soil
3 ingestion."

4 AUDIENCE MEMBER: When you say there
5 would have to be less than a million picocuries
6 per gram air volatilization for cesium-137 in
7 order to pose a risk, that's basically what this
8 means?

9 MR. MEYER: No. What this is saying
10 is that, say for the air inhalation, you would
11 need greater than a million picocuries per gram
12 there for air inhalation hazard.

13 AUDIENCE MEMBER: How does that
14 translate down to the 4,000,000 grams per year?
15 Does that --

16 MR. MEYER: You're talking about a
17 full body dose or gamma dose. Cesium poses a
18 very large whole body or organ damage, which this
19 didn't look at. This looked at the air
20 inhalation in taking it into the body. The
21 exposure of somebody coming up with direct
22 exposure isn't shown here.

23 AUDIENCE MEMBER: I can't imagine
24 anybody even surviving being exposed to, you know
25 --

1 MR. MEYER: You're right.

2 AUDIENCE MEMBER: -- 999,000

3 picocuries per gram of cesium-137 in a gram of
4 dust, if it got in their lungs.

5 MR. MEYER: You're right, and that's
6 what this is showing. You know, the risk level
7 from ingestion pathway or inhalation pathway is
8 not really a very valid pathway. You know, you
9 need so much of it there that it really impacts
10 other pathways that you look at. So you realize
11 that the direct exposure pathway is really the
12 most sensitive. It's not listed here, but it was
13 evaluated.

14 AUDIENCE MEMBER: That brings up an
15 issue, though, about what data do you really have
16 to support air inhalation and dust movement
17 around the INEL? Are you doing this based on
18 assumptions or do you actually have data on the
19 amount of dust that's being picked up and moved
20 around the INEL?

21 MR. MEYER: There is another group,
22 the environmental monitoring group, that does do
23 the sampling around the facilities. I don't know
24 much about that.

25 Nolan, do you?

1 MR. JENSEN: No, I don't know that
2 much about it. The only experience that I've had
3 with that is when we did the Warm Waste Pond at
4 TRA, and we used some of their data, particulate
5 data, just to do that evaluation of that. And
6 the reason we did that, it would be a real
7 conservative assumption, and we said, okay, this
8 is all the particulates coming into the facility,
9 what if we assume that every bit of that
10 particulate was out of the Warm Waste Pond. And
11 we did that to see, you know, what kind of risk
12 that might pose. But that's really the only time
13 I dealt with that data.

14 AUDIENCE MEMBER: To my knowledge the
15 data doesn't exist. All of those sorts of things
16 there are based on assumptions on dust movement
17 down there and without -- as far as I know -- any
18 data at all, any ground truthing at all.

19 MR. MEYER: There is some additional
20 data that is available. And like I said, I know
21 they do large area gamma surveys around all the
22 facilities, and we just don't see a whole lot of
23 wind-borne movement.

24 AUDIENCE MEMBER: Aren't those numbers
25 in the table independent of where you are?

1 MR. MEYER: The numbers in that table
2 say no matter where you were, if you were
3 inhaling that dust, that amount of dust, there
4 would be a problem.

5 What we're finding is we have much
6 less than those numbers in this particular site.

7 So I'm not certain where those numbers
8 were developed, but they are independent of
9 whether it's at the INEL or whether it's at Rocky
10 Flats.

11 It's whether you inhaled that dust
12 anywhere. And it's independent of the source of
13 that dust. So we're comparing what we have in
14 this particular site against --

15 AUDIENCE MEMBER: You're saying that
16 dust has to have a million picocuries per gram of
17 dust inhaled to present a risk?

18 MR. MEYER: Through inhalation. So
19 then the other numbers -- there are numbers in
20 the table there, so if you inhaled it, that much,
21 it wouldn't cause a problem through inhalation.
22 It might cause -- the next number in the table
23 addresses ingestion, and that's much lower. So
24 there is -- while you could inhale that much and
25 not have a problem, you could not eat that much,

1 because you would have a problem there.

2 AUDIENCE MEMBER: I don't understand
3 what --

4 MR. MEYER: Jeff, do you want to --

5 MR. FROMM: Yeah. The amount of
6 particulate that would be available for any
7 particular receptor is determined by model
8 recommended by EPA. And with the model, you are
9 able to input site specific kinds of information,
10 such as vegetative cover, average wind speed,
11 things like that. So, yes, there are assumptions
12 involved, there are approximations, certainly in
13 the inhalation pathway.

14 AUDIENCE MEMBER: That's what I said.

15 MR. FROMM: But what you're saying is
16 that it is dependent on environmental conditions.

17 AUDIENCE MEMBER: Well, indicative of
18 environmental conditions. And that's seems to me
19 if it's independent of environmental conditions,
20 then all of rest is meaningless. If you're
21 saying that we can inhale a gram of soil that's
22 got, as Chuck said, 999,000 picocuries per gram
23 of that soil, it's just (indiscernible) INEL and
24 still be safe.

25 AUDIENCE MEMBER: Be safe from

1 inhalation, but you would not be safe from
2 ingestion. There are different ways that you can
3 be damaged by radiation, and it's an imperfect
4 approach, but you have to look at: Okay, how
5 much would it take to damage me if I inhaled it
6 all? How much would it take to damage me if I
7 ate it all?

8 And you go and you find the lowest
9 level that would cause damage and you compare
10 what you have to that lowest level. And if you
11 were below the lowest level, you have an
12 acceptable risk. If you are above that lowest
13 level, there is a problem.

14 Do you follow what I'm saying?

15 MR. MEYER: Let me take a different
16 pathway. Groundwater is a little easier to
17 understand. And the way on these Track 1s we
18 evaluate that, we would take a very conservative
19 model and say, okay, if I have a site up here
20 that's 10 feet by 10 feet by 10 feet deep, if I
21 took that chunk of dirt, how much concentration
22 of contaminant would I have to have in that piece
23 of dirt to cause a contamination in the aquifer
24 below drinking water standards.

25 And then we take a very conservative

1 approach, and say we find out for example that
2 you would have to have a thousand parts per
3 million of lead to cause a problem in the
4 aquifer, using a very conservative model. Then
5 we say, okay, it would take a thousand parts per
6 million to cause a problem. If I've only got
7 five parts per million, then I'm pretty
8 comfortable that it's not a problem. And that's
9 kind of the approach we're taking here.

10 MR. FROMM: I think I can add one more
11 thing on inhalation.

12 When I talk about site specific
13 information which would be inputted in the model
14 for particulate inhalation, one of the things
15 that it is more sensitive to is the actual
16 dimensions of the site, which are not INEL
17 specific, but it's just either a large site or a
18 small site. This was a very small site. And I
19 think if you had a larger site you'd see that the
20 number would change really dramatically.

21 So you could have this concentration,
22 but let's say if you were in a standard
23 residential lot, this site would represent a
24 small portion of that. So there's a dilution
25 effect. If you were standing on a large plain

1 that had this concentration, then the risk number
2 would be different. But this is a very small,
3 isolated area.

4 AUDIENCE MEMBER: How small is it?

5 MR. MEYER: It's a three-foot diameter
6 french drain, surface water french drain. The
7 other analogy in that was a football-field size
8 with that concentrated (indiscernible). Well,
9 the point is that it is size of the contaminated
10 area, and I believe the groundwater ingestion is
11 the same situation because of what we have, a
12 soil concentration which would provide a kind of
13 10-to-the-minus-6 risk in groundwater, so we'd
14 have to model it to groundwater. And also the
15 size of our source is going to be a factor
16 there. So I think the main factor here is size.
17 That is kind of an unusual case, because it is
18 very small.

19 MR. MEYER: And the effect of how the
20 site size affects risk range shown in the other
21 contaminants here, like the range for the air
22 volatilization refers to 111 ppm, and that was
23 just a function of size of site. The smaller the
24 site, obviously, the more contaminant you would
25 need to be there for a standard residential lot.

1 That's a good point. Thank you.

2 MR. FROMM: And there was only the one
3 site with cesium. That's why there are only
4 single numbers.

5 MR. MEYER: And I apologize for not
6 having the direct exposure pathway on here. The
7 table was set up with petroleum sites in mind
8 first, so they don't have a direct exposure route
9 on radiation exposure route and I didn't put that
10 pathway on there. I can find that number if
11 you're interested.

12 AUDIENCE MEMBER: Well, I think that
13 something that would be a little bit more
14 meaningful to me is to compare this exposure
15 table to the four-millirem-per-year EPA and State
16 exposure level. You know, how bad does this
17 pathway have to be before you exceed the four
18 millirems?

19 MR. MEYER: And that's the direct
20 exposure route.

21 MR. JENSEN: Actually, though, the
22 four millirem is a drinking water standard, and
23 so it's kind of tough.

24 AUDIENCE MEMBER: Right.

25 MR. JENSEN: And that assumes you're

1 taking the water and putting it into your body,
2 but you can't really compare what are the
3 concentrations just sitting there on the ground
4 and I'm just getting gamma dose off of that to my
5 whole body. It's really not a good comparison to
6 if I drink water with that in it. And so I know
7 where you're coming from, but I'm not sure we can
8 do it.

9 AUDIENCE MEMBER: Well, that's an
10 inadequacy in the standards then. Actually,
11 they've got some standards on the way.

12 MR. FROMM: The existing and the
13 proposed drinking water standards are actually,
14 for most of the risks, they work out to a higher
15 risk level than one in a million. Many of the
16 rads are between --

17 AUDIENCE MEMBER: Certainly the
18 proposed ones.

19 MR. FROMM: Yeah, well, they're often
20 between 10 to the minus 4 and 10 to the minus 5,
21 so we take 10 to the minus 6 as a starting point,
22 which is actually more conservative than if we
23 were relying on (indiscernible).

24 MR. JENSEN: One of the biggest
25 struggles we have is trying to come up -- and

1 that's, I think, what you're referring to -- is
2 come up with what is an acceptable surface
3 concentration of radiation. And there's a lot of
4 people that have been discussing that for along
5 time and EPA has been trying to come up with a
6 number for that. I've seen things come across my
7 desk just recently, in fact, but I didn't read it
8 yet.

9 AUDIENCE MEMBER: It's only about that
10 thick.

11 MR. JENSEN: I was thinking more like
12 that. But they are working on it.

13 AUDIENCE MEMBER: The status report
14 for cleanup standards.

15 MR. JENSEN: Yeah.

16 AUDIENCE MEMBER: I've always been
17 going by the assumption that inhaling a
18 contaminant, particularly, you know, radionuclide
19 or something like that, because the lungs don't
20 really have as easy a means of purging
21 contaminants out of it, that that pathway is
22 actually more injurious biologically than through
23 gastrointestinal.

24 AUDIENCE MEMBER: Well, that's true
25 for alpha emitters, but not gamma or beta, the

1 reason being that the gamma is more of an x-ray
2 type emission or energy, it passes right through
3 and does very little cell damage, whereas the --
4 and the beta particle is very small, but the
5 alpha particle is fairly large. It's much
6 larger. Although it doesn't move as far because
7 of its size, it does a lot of cell damage, so the
8 gamma emitters are very high inhalation risk
9 hazards, while alpha emitters, which americium,
10 plutoniums and uraniums are --

11 AUDIENCE MEMBER: Well, that's not to
12 say that beta and gamma don't do any harm. You
13 can't say they don't do any harm.

14 AUDIENCE MEMBER: That's right, the
15 alpha's --

16 AUDIENCE MEMBER: It's a relative
17 thing. Cesium is pretty hot stuff. You don't
18 want to mess with that no matter.

19 MR. MEYER: The other contaminants
20 shown in that table, you can get an idea of the
21 comparison of the numbers that we found at some
22 of the sites on page 15. The first site shown,
23 IE-210, the contaminant xylene was 2.3 parts per
24 million found in the soil. And when you look at
25 the risk range that is presented in the table,

1 you can see we're far below those. So from a
2 site use and historical use and from a risk point
3 of view, these sites were considered at a very
4 low risk.

5 In summary, the agencies have
6 recommended no further action based on the fact
7 that for the first 23 sites the findings showed
8 that the historical records, the field sampling,
9 no contaminants were present; and for the
10 remaining eight sites, the risk assessment
11 indicated that the contaminants posed an
12 acceptable risk level.

13 If there are any questions, I'd be
14 glad to address any more at this point.

15 AUDIENCE MEMBER: Surely you could put
16 there for groundwater ingestion the -- why
17 couldn't you put the 119 picocuries per liter?

18 MR. JENSEN: That assumes -- I think
19 what you're saying is 119 picocuries per liter
20 equates to the four millirem. Is that what
21 you're saying?

22 AUDIENCE MEMBER: It's close to it.

23 MR. JENSEN: The reason -- I mean, you
24 can do that, but the problem with that is, if I
25 have, for example, cesium and cobalt and a couple

1 of others, the four millirem is from all of
2 them. And so if say cesium-137 is 119, and
3 that's true, it's only true if I don't have
4 anything with else with that.

5 MR. FROMM: Again, we're talking about
6 soil contamination, soil concentration versus
7 water concentration, so --

8 MR. MEYER: This is what would be
9 needed in the soil at the site to make it down to
10 the water table as a posed risk.

11 MR. FROMM: Right.

12 MR. MEYER: This isn't what you would
13 drink in the water. This is what would need to
14 be at the site to migrate down to the water table
15 to pose a 10-to-the-minus-6 risk.

16 AUDIENCE MEMBER: I'd strongly
17 recommend in the future that if you continue to
18 use these kinds of tables you're going to have to
19 have a whole lot more text explaining what the
20 table means, because it's not there. I mean, I'm
21 still not real sure I understand it. But, you
22 know, fine, if you want to use that, but you're
23 going to have to explain what these numbers mean.

24 MR. HARELSON: You should have seen it
25 before we revised it.

1 AUDIENCE MEMBER: I question whether
2 that's even the appropriate way to look at the
3 risks, to quantify the risks.

4 MR. JENSEN: The problem we've got,
5 for example, groundwater is easier to understand,
6 so I'll use that one.

7 If I've got, say, an oil spill out
8 here, I mean, obviously I could go out and drill
9 a well and see if that oil spill had contaminated
10 the ground water. But we know it hasn't. We
11 know there's no way for that oil spill to have
12 already gotten down to the groundwater, so it's
13 kind of pointless to drill a well 400 feet deep
14 to check it. So what we're trying to do is say,
15 okay, I know I've got the oil spill here, I'll
16 sample it. Someday that might -- there might be
17 enough rainwater to flush that clear to the
18 aquifer. We've got to come up with some way to
19 evaluate if there's enough contaminate there to
20 cause a problem in the groundwater.

21 And so what we are doing is coming up
22 with hopefully very conservative models, so that
23 when we say, okay, I think it would take for
24 example 1,000 parts per million to cause a
25 problem, that when we say, okay, I've only got 10

1 or 50 or 100, then I'm pretty sure that it's not
2 going to be a problem in the future. Because
3 like you say, it would be nice to be able to
4 punch a well and say, okay, it's not a problem
5 because there is nothing in the aquifer, but --

6 AUDIENCE MEMBER: No, that's not what
7 I'm saying. I'm saying the opposite. I'm saying
8 that the concentration that's sitting there on
9 the soil surface has some intrinsic hazard in
10 itself, irrespective of its relationship to the
11 aquifer, or humans, or -- I mean, there's other
12 things, there's vegetation and animals that you
13 guys haven't even considered, that there is an
14 intrinsic pollution there if that oil is sitting
15 there on the surface of the ground. That's a
16 pollutant, irrespective of what your models say
17 about when it's going to get to the aquifer.

18 AUDIENCE MEMBER: Just remember, this
19 is the same country, you know, where the Big Lost
20 River disappears.

21 MR. JENSEN: No argument there. But
22 all we're trying to do is come up with a -- and
23 the way we did these Track 1s was to come up with
24 a way to evaluate these smaller sites to get a
25 feel for if it's even worth evaluating further.

1 And there is --

2 Go ahead.

3 MR. FROMM: Well, and I think another
4 important point is, it doesn't mean the book is
5 permanently closed on these. If there are areas
6 -- any contamination of any of the sites,
7 Track 1, Track 2, in more detailed remedial
8 investigations will be evaluated as part of a
9 comprehensive evaluations, each Waste Area Group,
10 and this will include human health evaluation,
11 ecological --

12 AUDIENCE MEMBER: We've heard that a
13 number of times. We know that's going to
14 happen.

15 MR. MEYER: One of the things I would
16 like to point out is that the way these Track 1s
17 were set up is they looked at the sites from
18 three points of view, and the first was
19 historical use, and the other one was from
20 sampling data, go out and sample what's there,
21 the other was from a risk assessment.

22 And each one of those was kind of
23 considered to be an independent leg, an
24 independent way of looking at the site. And if
25 there was anything about either one of those

1 potential possibilities of what you knew or
2 whether the uncertainty was greater or if there
3 was a lot of uncertainty about information from
4 the historical use of the site, those sites were
5 automatically suspect, and additional information
6 was required at many of them.

7 For the one where the cesium was
8 detected in the surface water drain, we had a
9 contaminant level of 6 picocuries, and the only
10 historical information about that site was we had
11 a known release of one gallon, is what we know
12 went to that one spot.

13 So with that information, it seemed
14 like there was a very low potential for that
15 site, it wasn't a site that routinely received
16 contaminants through time.

17 And the same with the underground
18 storage tank sites. We either had no indication
19 that the tanks leaked, or there were no holes in
20 the tanks, the piping hadn't leaked, and when you
21 sampled around them, we found very low levels or
22 non-detects for sample.

23 So it wasn't just we were relying on
24 just the risk assessment to say there wasn't a
25 problem there, but we were looking at a whole

1 body of data to make our recommendations from.

2 AUDIENCE MEMBER: That's my other
3 comment about these in terms of I'm wondering why
4 the wastewater disposal sites weren't sampled.

5 MR. MEYER: I believe we do have
6 monitoring data from the effluent from those.

7 AUDIENCE MEMBER: Well, to read the
8 reports here --

9 MR. MEYER: More historical
10 information showed that there was just no
11 contaminant that ever went out to that site. And
12 site visits, when you went out there, there was
13 no obvious staining, there was no obvious
14 vegetation stress.

15 AUDIENCE MEMBER: Well, still to
16 follow your third leg hypothesis seems to me
17 there should have been sampling, and I just feel
18 like observing vegetation stress doesn't tell me
19 very much. Soil staining in that environment
20 doesn't tell me very much. I mean, none of those
21 other criteria used tell me very much about some
22 of the potential pollutants that could be in
23 those waste water ponds. I'm just wondering why,
24 if that third leg is important to you, why it
25 wasn't done.

1 MR. MEYER: Well, it says, records
2 indicate. That means monitoring data, because
3 what we have for those effluent monitoring data,
4 because those ponds were up into use until the
5 late '80s, so we still have some monitoring
6 data. And it says records indicate that only low
7 concentrations; and they sample for a whole range
8 of things.

9 AUDIENCE MEMBER: We know what the
10 records at INEL were like. They were hardly
11 complete.

12 AUDIENCE MEMBER: I think if you're
13 going to completely analyze just these few
14 paragraphs, I do believe those backup records are
15 in the Administrative Record that go through a
16 lot of this information and evaluate how accurate
17 it might be, and it has the actual records in
18 there, so there's a lot of information that
19 couldn't be summarized in the proposed plan, but
20 it's in the Administrative Record.

21 MR. MEYER: Yeah, I can show you the
22 waste water reports and what they look for.

23 MR. JENSEN: I was just going to say,
24 we're kind of getting to a point now where we're
25 getting comment more than questions. Can we go

1 ahead and do the comment period now, and then we
2 can talk more if you like later? Is that
3 appropriate? Is that okay?

4 AUDIENCE MEMBER: I made my comment.

5 MR. JENSEN: Are you guys comfortable
6 that you can go back to the record and get the
7 comment out of that, or can we ask you to maybe
8 give it as a comment again.

9 MR. DECHERT: I just, as a comment, I
10 think that those wastewater treatment or
11 wastewater disposal sites, the soils should be
12 sampled and fully analyzed, because I think the
13 records are, you know, incomplete.

14 MR. JENSEN: Again, during the comment
15 period, we're not going to respond.

16 Chuck, did you want to comment?

17 MR. BROSCIOUS: That was what I had
18 underlined, too, the fact that it says here
19 "although no soil sampling was conducted," "no
20 soil sampling conducted," "although no soil
21 sampling conducted," and it goes on and on. You
22 know, good gosh, that doesn't sound to me like a
23 very reasonable way to approach that kind of
24 assessment.

25 MR. JENSEN: Did you want to comment,

1 sir?

2 AUDIENCE MEMBER: No, I'm all set.
3 I'm just here to learn.

4 MR. JENSEN: Okay. Anybody else?
5 Let's go ahead and close the comment
6 period then.

7 Remember again that the comment period
8 is open until June 17 -- which is a week from
9 Friday, is that right? Something like that. And
10 so you can submit comments any time. And this
11 basically concludes our meeting, so if you'd like
12 hang around and talk to these folks, we'd be
13 willing to do that. Thanks for coming.

14 (Meeting concluded at 8:43 p.m.)
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REPORTER'S CERTIFICATE


STATE OF IDAHO)
) ss.
COUNTY OF ADA)

I, DENECE GRAHAM, Certified Shorthand Reporter and Notary Public duly qualified in and for the State of Idaho do hereby certify:

That said hearing was taken down by me in shorthand at the time and place therein named and thereafter reduced to computer type, and that the foregoing transcript contains a true and correct record of the said hearing, all done to the best of my ability.

I further certify that I have no interest in the event of this action.

WITNESS my hand and seal this 8th day of July, 1994.


DENECE GRAHAM, C.S.R. and
NOTARY PUBLIC in and for
the State of Idaho.

My Commission expires April 21, 2000

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Look-See Concordance Report

UNIQUE WORDS: 1,553

TOTAL OCCURRENCES: 5,181

NOISE WORDS: 385

TOTAL WORDS IN FILE:

14,439

SINGLE FILE CONCORDANCE

CASE SENSITIVE

NOISE WORD LIST(S):
NOISE.NOIINCLUDES ALL TEXT
OCCURRENCES

IGNORES PURE NUMBERS

WORD RANGES @ BOTTOM
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